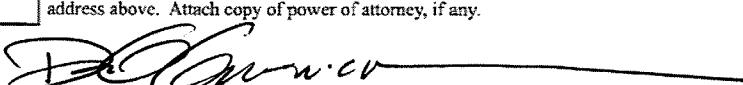


EXHIBIT A

UNITED STATES BANKRUPTCY COURT FOR THE SOUTHERN DISTRICT OF NEW YORK		PROOF OF CLAIM
Name of Debtor (Check Only One): <input checked="" type="checkbox"/> Motors Liquidation Company (f/k/a General Motors Corporation) <input type="checkbox"/> MLCS, LLC (f/k/a Saturn, LLC) <input type="checkbox"/> MLCS Distribution Corporation (f/k/a Saturn Distribution Corporation) <input type="checkbox"/> MLC of Harlem, Inc. (f/k/a Chevrolet-Saturn of Harlem, Inc.)		Case No. 09-50026 (REG) 09-50027 (REG) 09-50028 (REG) 09-13558 (REG)
<small>NOTE: This form should not be used to make a claim for an administrative expense arising after the commencement of the case, but may be used for purposes of asserting a claim under 11 U.S.C. § 503(b)(9) (see Item # 5). All other requests for payment of an administrative expense should be filed pursuant to 11 U.S.C. § 503.</small>		
Name of Creditor (the person or other entity to whom the debtor owes money or property): Waste-Stream, Inc.		U.S. BANKRUPTCY COURT 2009 NOV 30 P 4:1 S.D.N.Y.
Name and address where notices should be sent: Waste-Stream, Inc. c/o Casella Waste Systems, Inc. 25 Greens Hill Lane Rutland, VT 05701 Attn: General Counsel (re: Potsdam Site)		<input type="checkbox"/> Check this box to indicate that this claim amends a previously filed claim. Court Claim Number: _____ <small>(If known)</small> Filed on: _____
Telephone number: (802) 772-2200 Email Address: david.carpenter@casella.com		<small>If an amount is identified above, you have a claim scheduled by one of the Debtors as shown. (This scheduled amount of your claim may be an amendment to a previously scheduled amount.) If you agree with the amount and priority of your claim as scheduled by the Debtor and you have no other claim against the Debtor, you do not need to file this proof of claim form, EXCEPT AS FOLLOWS: If the amount shown is listed as DISPUTED, UNLIQUIDATED, or CONTINGENT, a proof of claim MUST be filed in order to receive any distribution in respect of your claim. If you have already filed a proof of claim in accordance with the attached instructions, you need not file again.</small>
Name and address where payment should be sent (if different from above):		<input type="checkbox"/> Check this box if you are aware that anyone else has filed a proof of claim relating to your claim. Attach copy of statement giving particulars. <input type="checkbox"/> Check this box if you are the debtor or trustee in this case.
Telephone number:		
1. Amount of Claim as of Date Case Filed, June 1, 2009: \$ 30,920,000 (estimated unliquidated damages) If all or part of your claim is secured, complete item 4 below; however, if all of your claim is unsecured, do not complete item 4. If all or part of your claim is entitled to priority, complete item 5. If all or part of your claim is asserted pursuant to 11 U.S.C. § 503(b)(9), complete item 5. <input type="checkbox"/> Check this box if claim includes interest or other charges in addition to the principal amount of claim. Attach itemized statement of interest or charges.		
2. Basis for Claim: Indemnification (CERCLA 107) for environmental cleanup obligations, (See instruction #2 on reverse side.) natural resource damages, and toxic tort liability. (See attached)		
3. Last four digits of any number by which creditor identifies debtor: _____ 3a. Debtor may have scheduled account as: _____ <small>(See instruction #3a on reverse side.)</small>		
4. Secured Claim (See instruction #4 on reverse side.) Check the appropriate box if your claim is secured by a lien on property or a right of setoff and provide the requested information. Nature of property or right of setoff: <input type="checkbox"/> Real Estate <input type="checkbox"/> Motor Vehicle <input type="checkbox"/> Equipment <input type="checkbox"/> Other Describe: Value of Property: \$ _____ Annual Interest Rate % Amount of arrearage and other charges as of time case filed included in secured claim, if any: \$ _____		
Basis for perfection: _____ Amount of Secured Claim: \$ _____ Amount Unsecured: \$ _____		
6. Credits: The amount of all payments on this claim has been credited for the purpose of making this proof of claim.		
7. Documents: Attach redacted copies of any documents that support the claim, such as promissory notes, purchase orders, invoices, itemized statements or running accounts, contracts, judgments, mortgages, and security agreements. You may also attach a summary. Attach redacted copies of documents providing evidence of perfection of a security interest. You may also attach a summary. (See instruction 7 and definition of "redacted" on reverse side.) DO NOT SEND ORIGINAL DOCUMENTS. ATTACHED DOCUMENTS MAY BE DESTROYED AFTER SCANNING.		
If the documents are not available, please explain in an attachment.		
Date: 11/30/2009	Signature: The person filing this claim must sign it. Sign and print name and title, if any, of the creditor or other person authorized to file this claim and state address and telephone number if different from the notice address above. Attach copy of power of attorney, if any.	
		FOR COURT USE ONLY
<small>Penalty for presenting fraudulent claim: Fine of up to \$500,000 or imprisonment for up to 5 years, or both. 18 U.S.C. §§ 152 and 3571.</small> <small>Modified B10 (GCG) (12/08)</small>		

\$

*Amounts are subject to adjustment on 4/1/10 and every 3 years thereafter with respect to cases commenced on or after the date of adjustment.

OFFICE COPY

Case No. 09-50026, United States Bankruptcy Court for the Southern District of New York
General Motors Corporation (n/k/a "Motors Liquidation Company")

SUPPORTING MEMORANDUM TO PROOF OF CLAIM FILED BY WASTE-STREAM, INC.

November 30, 2009

General Motors Corporation (n/k/a "Motors Liquidation Company") (hereinafter "GM") is a "responsible party" under various environmental laws, including the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA") the New York State Environmental Conservation Law, and the New York State Navigation Law, with respect to the New York State Inactive Hazardous Site known as the Waste Stream, Inc. Site, located in Potsdam, New York (the "Site"). The Site is owned by Waste-Stream, Inc.

GM and/or its predecessors in interest sent hazardous waste to, or in the immediate vicinity of, the Site. GM (with others) is the subject of two Consent Orders with the New York State Department of Environmental Conservation ("NYSDEC") (No. A6-0222-09-02, dated April 30, 1990 and A6-0399-9911 dated December 20, 2000) relating to investigation and remediation of the Site.

This proof of claim asserts the estimated costs relating to investigation and remediation of environmental contamination at the Site could be as high as \$30,920,000 (the "Clean-up Costs"), though the "preferred remedy" for the Site is estimated to be less. The final amount of Clean-up Costs may be lower or higher than the claimed amount, however, depending upon the remedy approved by NYSDEC and the amount of any natural resource damages, toxic tort damages, or other liabilities or damages, costs or fees. GM's allocable share of the Clean-up Costs is undetermined and unliquidated at this time.

Attached hereto as Exhibits to this Proof of Claim filed are the following

- 1990 Consent Order
- 2000 Consent Order
- Excerpts from May 2009 Arcadis *Feasibility Study Report* (Executive Summary and cost estimates for alternatives). A full copy may be provided upon request.

In addition to the foregoing, Waste-Stream, Inc. also makes a claim for all direct, indirect, nominal or consequential damages, interests, costs, attorneys' fees and other amounts owed or owing to it, whether liquidated, unliquidated, fixed, contingent, matured, unmatured, disputed, undisputed, legal, equitable, secured or unsecured.

Waste-Stream, Inc. expressly reserves its right to replace, amend and/or supplement this proof of claim at any time and for whatever reason and to assert any and all other claims of whatever kind or nature (including administrative claims) accruing to it at law, in equity or otherwise that it has or may have against GM that come to its attention or arise after the filing of this proof of claim. The filing of this proof of claim shall not be deemed a waiver of any such claims or rights.

OFFICE 66

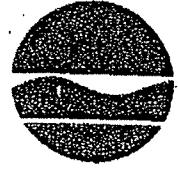
Case No. 09-50026, United States Bankruptcy Court for the Southern District of New York
General Motors Corporation (n/k/a "Motors Liquidation Company")

By executing and filing this proof of claim, Waste-Stream, Inc. does not waive any other right, remedy, claim, interest, or rights with respect to any claim that Waste-Stream, Inc. has or may have against GM or any other person or persons.

Nothing contained in this proof of claim shall be deemed or construed as (a) a consent by Waste-Stream, Inc. to the jurisdiction of the Court or any other court with respect to proceedings, if any, commenced in any case against, or otherwise involving, Waste-Stream, Inc.; (c) a waiver or release of, or any limitation on, Waste-Stream, Inc.'s right to trial by jury in the Court or any other court in any proceeding; (d) a waiver or release of, or any limitation on, Waste-Stream, Inc.'s rights to have any orders entered only after *de novo* review by the United States District Court; (e) a waiver or release of, or any limitation on, Waste-Stream, Inc.'s right to seek withdrawal of the reference with respect to any matter pertaining to GM or arising in GM's bankruptcy case, including any matter relating to this proof of claim; or (f) a waiver or release of, or any limitation on, Waste-Stream, Inc.'s right to assert that any portion of the claims asserted herein are entitled to treatment as administrative or priority claims.

EXHIBIT A

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233-5501



Thomas C. Jorling
Commissioner

May 2, 1990

Don Schiemann, Esq.
General Motors Corporation
Legal Department
P.O. Box 33122
New Center One Building
Detroit, MI 48232

Jeff R. Clark, Esq.
Nixon, Hargrave, Devans & Doyle
P.O. Box 1051
Lincoln First Tower
Rochester, NY 14603

Daniel S. Cohen, Esq.
Evans, Sebern, Bankert & Peet
31 Genesee Street
Utica, NY 13501

Re: PCB Contaminated Equipment at Waste Stream Management -
Potsdam, New York

Gentlemen:

Enclosed herewith is a copy of the duly executed Order on
Consent regarding the above matter.

In accordance with the approved Work Plan, please give
Peter Onderkirk of the DEC Region 7, ten days notice prior to the
initiation of the cleanup process.

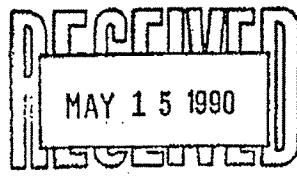
Thank you for your cooperation in bringing this matter to a
conclusion.

Very truly yours,

Marianna Wojnas

Marianna Wojnas
Attorney
Division of Environmental
Enforcement
(518) 457-3296

MW/tle
Enclosure



STATE OF NEW YORK: DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of the Development
and Implementation of a Work Plan
for the Remediation of PCB
Contaminated Equipment at 145 Outer
Maple St., Potsdam, New York, Pursuant
to Article 27, Titles 3, 9, and 13 of
the Environmental Conservation Law of
the State of New York (the "ECL") by:

ORDER
ON
CONSENT

Index # A6-0222-09-02

General Motors Corporation -
Central Foundry Division, Mineral
Processing Corporation and
Waste Stream Management, Inc.

Respondents.

WHEREAS:

1. The New York State Department of Environmental Conservation (the "Department") is responsible for the enforcement of Article 27, Title 3 of the Environmental Conservation Law entitled "Waste Transporter Permits", Title 9 entitled "Industrial Hazardous Waste Management", and Title 13 entitled "Inactive Hazardous Waste Disposal Sites".
2. Respondent, General Motors - Central Foundry Division ("GM - CFD"), is a corporation organized and existing under the laws of the State of Delaware and is registered to do business in New York, and transacting business in the Town of Massena, County of St. Lawrence, State of New York.
3. Respondent, Mineral Processing Corporation ("MPC"), is a corporation organized and existing under the State of New York. MPC owns and operated a now defunct dross foundry in Massena, New York where it, inter alia, reprocessed waste materials to reclaim aluminum for re-sale.

4. Respondent, Waste Stream Management, Inc. ("WSM"), is a corporation organized and existing under the State of New York and is doing business in the State of New York at its Potsdam facility.

5. Respondents, GM - CFD, MPC, and WSM are subject to New York State rules and regulations contained in 6 NYCRR Part 364 and Parts 370 - 373, promulgated pursuant to Article 27, Titles 3 and 9 of the Environmental Conservation Law.

6. In approximately October 1985, GM - CFD sold and disposed of four pieces of scrap equipment (one hydraulic press, one mill machine and two plastic injection molding machines) to MPC.

7. In approximately November 1985, MPC transported such equipment from GM - CFD to MPC's place of business in Massena.

8. In approximately April 1989, MPC sold and disposed of four pieces of equipment purchased from GM - CFD to WSM.

9. In approximately April 1989 WSM transported such equipment from MPC in Massena to WSM's place of business in Potsdam, hereinafter referred to as the "Potsdam property".

10. Laboratory results of samples taken of such equipment, which is now located at the Potsdam property, indicate concentration levels of polychlorinated biphenyl (PCBs) greatly exceeding 50 ppm.

11. Solid wastes containing 50 ppm or greater PCB's are regulated by the State of New York as hazardous wastes,

requiring compliance with both New York State statutes and regulations and 40 CFR Part 761.

12. Pursuant to the aforementioned environmental conservation laws, including Environmental Conservation Law Article 27, Title 71 and regulations promulgated thereto, the Department has the enforcement authority to seek administrative, civil and/or criminal sanctions and penalties for violations of such laws and regulations.

13. The Department and Respondents acknowledge that the goal of this Order shall be the expeditious development and implementation of a work plan which will include at a minimum, provisions for investigation of the Potsdam property areas in which the equipment has been placed or stored, cleaning the contaminated equipment, sampling and clean-up of soil in the immediate areas of the equipment which are contaminated by PCBs, oversight of clean-up activities by licensed engineers, certification by such engineers that the clean-up activities were done in accordance with the work plan, and any appropriate follow-up as may be required by the Department.

14. Respondents, having waived their rights to a hearing in this matter, and having consented to the issuance and entry of this Order, agree to be bound by its terms.

NOW, THEREFORE, having considered this matter and being duly advised, IT IS ORDERED THAT:

I. By March 1, 1990, Respondents shall develop and submit

to the Department a work plan outlining the nature and extent of the work to be undertaken. Thereafter, the Department shall review and make a determination whether the work plan is acceptable to the Department. If the work plan is not acceptable to the Department the Respondent shall be given an additional 30 day period in which to revise and resubmit the work plan to the Department. If the revised work plan is not acceptable to the Department the Respondents shall have violated this Order.

II. Within 10 days of receiving the approval of the Department, Respondents shall commence the implementation and performance of the approved work plan, attached as Appendix "A" and incorporated into this Order making it an enforceable part hereof.

III. Respondents shall complete performance of all investigation, sampling, decontamination, clean-up, and oversight activities in accordance with the approved work plan.

IV. In transporting the four pieces of equipment from the Potsdam property to GM - CFD's place of business in Massena, in order to decontaminate such machinery in accordance with the approved work plan, GM - CFD shall be considered a generator solely for the purpose of 6 NYCRR Part 372.

GM - CFD's acceptance of this status shall only be for purposes of accomplishing the work to be performed pursuant to this Order on Consent and shall not be construed as an

admission of liability, or used as evidence of any liability other than in connection with any violation(s) of Part 372 in transporting such machinery to GM - CFD's facilities pursuant to this Order on Consent.

V. Respondents shall provide the Department with notice at least 5 working days in advance of work to be conducted. pursuant to the terms of this Order.

VI. Respondent, WSM, shall permit any duly designated officer, employee, consultant, contractor, or agent of the Department to enter upon its Potsdam property or areas in the vicinity of its Potsdam property which may be under the control of Respondent, WSM and any areas necessary to gain access thereto, for purposes of inspection and of making or causing to be made such sampling and tests as the Department deems necessary, and for assurance of Respondents' compliance with the terms of this Order.

VII. If Respondents retain a third-party professional consultant, contractor and/or laboratory to perform the obligations required by this Order, such consultant, contractor, and/or laboratory shall be acceptable to the Department. Approval of consultants retained by Respondents by the Department shall not be unreasonably withheld.

VIII. Respondents shall not suffer any penalty under any of the terms of this Order, or be subject to any proceeding or actions for any remedy or relief, if they cannot comply with any requirements hereof because of an act of God or war,

provided, however, the Respondents shall immediately notify the Department in writing when they obtain knowledge of any such condition and request an extension or modification of the terms of this Order.

IX. The failure of Respondents to comply with any term of this Order shall constitute a default and a failure to perform an obligation under this Order and under the Environmental Conservation Law.

X. Nothing contained in this Order shall be construed as barring, diminishing, adjudicating, or in any way affecting any of the Department's rights including, but not limited to, the following:

a. the Department's right to enforce at law or in equity the terms and conditions of this Order against any or all of the Respondents, their directors, officers, employees, servants, agents, successors and assigns in the event that Respondents shall fail to satisfy any of the terms hereof;

b. the Department's right to bring any action at law or in equity against any person including Respondents, their directors, officers, employees, servants, agents, successors and assigns with respect to areas or resources that may have been affected or contaminated as a result of the release or migration of hazardous or industrial wastes at or from the Potsdam property or at or from areas in the vicinity of the Potsdam property;

c. any action or proceeding to which the Department

may be entitled in connection with, relating to, or arising out of the presence of hazardous wastes at the Potsdam property, or the release or migration of hazardous wastes from the Potsdam property;

d. any of Respondents' defenses against any such claims, actions, proceedings, causes of actions or demands; and

e. Respondents' right to seek contribution from each other or any legal or equitable rights or claims Respondents may have against anyone other than the Department.

XI. The terms of this Order shall not be construed to prohibit the Commissioner or his duly authorized representative from exercising any summary abatement powers, either at common law or as granted pursuant to statute or regulation.

XII. Respondents shall indemnify and hold the Department, the State of New York, and their representatives and employees harmless for all claims, suits, actions, damages and costs of every name and description arising out of or resulting from the fulfillment or attempted fulfillment of the terms of this Order by Respondents, their directors, officers, employees, servants, agents, successors or assigns.

XIII. The effective date of this Order shall be the date it is signed by the Commissioner or his designee.

XIV. If the Respondents desire to deviate from the provisions of this Order in any way, they shall make timely

written application therefor to the Commissioner, setting forth reasonable grounds for the relief sought.

XV. The terms of this Order shall be deemed to bind jointly and severally the Respondents, their officers, directors, agents, servants, employees, successors, and assigns.

XVI. Nothing herein shall be construed to bind any entity not specifically bound by the terms of this Order.

XVII. The terms hereof shall constitute the complete and entire Order between the Respondents and the Department concerning this matter. No terms, conditions, understandings or agreements purporting to modify or vary the terms hereof shall be binding unless made in writing and subscribed by the party to be bound. No informal advice, guidance, suggestions or comments by the Department regarding reports, proposals, plans, specifications, schedules or any other writing submitted by the Respondents shall be construed as relieving the Respondents of their obligation to obtain such formal approvals as may be required by this Order.

DATED: Albany, New York
April 30, 1990

THOMAS C. JORLING
Commissioner
New York State Department of
Environmental Conservation

BY:


Edward O. Sullivan
Deputy Commissioner

CONSENT BY RESPONDENTS

Respondent hereby consents to the issuing and entering of this Order, waives its right to a hearing herein as provided by law, and agrees to be bound by the provisions, terms and conditions contained in this Order.

GENERAL MOTORS CORPORATION

By:

Benjamin Scheeszel

Title:

Plant Manager

Date:

3/17/90

STATE OF NEW YORK)
) SS.:
COUNTY OF)

On this 17 day of MARCH , 1990, before me personally came Benjamin Scheeszel to me known, who, being by me duly sworn, did depose and say that he resides in MASSENA, N.Y ; that he is the Plant Manager of Central Foundry , General Motors Corporation, the corporation described herein and that he executed the foregoing instrument on behalf of said corporation; that he represents that he has the authorization to bind the corporation to this Order and that he has signed his name hereto.

David Northrop
Notary Public

DAVID B. NORTHRUP
NOTARY PUBLIC IN THE STATE OF NEW YORK
APPOINTED IN ST. LAWRENCE COUNTY
BY COMMISSION EXPIRES July 30, 1990
7-19-90

* 10

CONSENT BY RESPONDENTS

Respondent hereby consents to the issuing and entering of this Order, waives its right to a hearing herein as provided by law, and agrees to be bound by the provisions, terms and conditions contained in this Order.

MINERAL PROCESSING CORPORATION

By: James J. Pelletier
Title: Pres.
Date: 3-16-90

OHIO
STATE OF NEW YORK)
COUNTY OF Summit) S.S.:

On this 16th day of MARCH, 1990, before me personally came James Wallace, to me known, who being duly sworn, did depose and say that he resides in AKRON, Ohio; that he is the PRESIDENT of the MINERAL PROCESSING corporation described in and which executed the foregoing instrument; that he knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by the order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

Charlotte A. Eberhardt
Notary Public

CHARLOTTE A. EBERHARDT, Notary Public
Residence - Summit County
State Wide Jurisdiction, Ohio
My Commission Expires June 2, 1993

11

CONSENT BY RESPONDENTS

Respondent hereby consents to the issuing and entering of this Order, waives its right to a hearing herein as provided by law, and agrees to be bound by the provisions, terms and conditions contained in this Order.

WASTE STREAM MANAGEMENT, INC.

By: President
Title: Vice-President
Date: 3/15/90

STATE OF NEW YORK)
COUNTY OF) C.e.:

On this 15th day of March, 1990, before me personally came Chester W. Bissell, to me known, who being duly sworn, did depose and say that he resides in Potsdam, N.Y. that he is the Vice-President of the WASTE STREAM MANAGEMENT, INC. corporation described in and which executed the foregoing instrument; that he knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by the order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

Charlene M. Reced
Notary Public

Charlene M. Reed
Notary Public State of New York
#4954667
Qualified in ST. LAWRENCE COUNTY
My Commission Expires 8-14-41
(DISK C.O. #1/FILE:GMMPWS2.MW)

EXHIBIT B

STATE OF NEW YORK: DEPARTMENT OF ENVIRONMENTAL CONSERVATION

In the Matter of the Development
and Implementation of a Focused
Remedial Investigation/Feasibility
Study for an Inactive Hazardous
Waste Disposal Site, Under Article 27,
Title 13, and Article 71, Title 27 of
the Environmental Conservation Law
of the State of New York by:

ORDER ON CONSENT

INDEX # A6-0399-9911

Site #6-45-022

Waste Stream, Inc.
General Motors Corporation, and
Niagara Mohawk Power Corporation,

Respondents.

WHEREAS,

1. The New York State Department of Environmental Conservation (the "Department") is responsible for enforcement of Article 27, Title 13 of the Environmental Conservation Law of the State of New York ("ECL"). This Order is issued pursuant to the Department's authority under, inter alia, ECL Article 27, Title 13 and ECL 3-0301.
2. Respondent, General Motors Corporation, ("GM") is a business corporation organized and existing under the laws of the State of Delaware and is registered to conduct business in New York State in the Town of Massena, New York.
3. Respondent, Waste-Stream Inc., ("WSI") is a business corporation organized and existing under the laws of the State of New York, conducting business at 145 Outer Maple Street, Potsdam, New York.
4. Respondent, Niagara Mohawk Power Corporation, ("NiMo") is a business corporation organized and existing under the laws of the State of New York, conducting business at 300 Erie Boulevard West, Syracuse, New York.

5. GM, WSI and MiMo are collectively referred to herein as "Respondents".

6. WSI is the owner of a 25 acre parcel of property located at 145 Outer Maple Street in the City of Potsdam, New York (hereinafter referred to as "the Site"), which property has been operated by Respondent WSI as a salvage yard. Portions of the property have been found to be contaminated with PCBs, heavy metals and petroleum residuals. A site map is attached as Appendix A to this Order.

7. The Site is an inactive hazardous waste disposal site, as that term is defined at ECL 27-1301.2, which the Department asserts constitutes a significant threat to the public health or environment. The Site has been listed by the Department in the Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site Number 6-45-022. The Department has classified the Site as a Classification "2" pursuant to ECL 27-1305.4.b.

8. A. Pursuant to ECL 27-1313.3.a, whenever the Commissioner of Environmental Conservation (the "Commissioner") "finds that hazardous wastes at an inactive hazardous waste disposal site constitute a significant threat to the environment, he may order the owner of such site and/or any person responsible for the disposal of hazardous wastes at such site (i) to develop an inactive hazardous waste disposal site remedial program, subject to the approval of the department, at such site, and (ii) to implement such program within reasonable time limits specified in the order."

B. Any person under order pursuant to ECL 27-1313.3.a has a duty imposed by ECL Article 27, Title 13 to carry out the remedial program committed to under order. ECL 71-2705 provides that any person who fails to perform any duty imposed by ECL Article 27, Title 13 shall be liable for civil, administrative and/or criminal sanctions.

C. The Department also has the power, inter alia, to provide for the prevention and abatement of all water, land, and air pollution. ECL 3-0301.1.i.

9. The Department and Respondents agree that the goals of this Order are for Respondents to (i) implement a Focused Remedial Investigation ("Focused RI") and Feasibility Study ("FS") for the Site as set forth in the Department-approved Work Plan

attached hereto as Appendix "B"; and (ii) reimburse the State's administrative costs as provided in Paragraph IX of this Order.

10. Respondents, without any admission of law or fact, having waived Respondents' right to a hearing herein as provided by law, and having consented to the issuance and entry of this Order, agree to be bound by its terms. Respondents consent to and agree not to contest the authority or jurisdiction of the Department to issue or enforce this Order, and agree not to contest the validity of this Order or its terms.

NOW, having considered this matter and being duly advised, IT IS ORDERED THAT:

I. Initial Submittal

Within thirty (30) days after the effective date of this Order, Respondents shall submit to the Department all data within Respondents' possession or control, including data which may come within Respondents control in the future, regarding environmental conditions on-Site and off-Site, and other information described below, unless the Respondents have previously provided such data to the Department. The data and other information shall include:

A. A brief history and description of the Site, including the types, quantities, physical state, location, and dates of disposal of hazardous waste including methods of disposal and spillage of such wastes;

B. A comprehensive list and copies of all existing relevant reports with titles, authors, and subject matter, as well as a description of the results of all previous investigations of the Site and areas in the vicinity of the Site, including copies of all available topographic and property surveys, engineering studies and aerial photographs. Respondents represent that prior to the signing of this Order, they have provided the above referenced information to the Department.

II. Performance and Reporting of Focused Remedial Investigation

A. Respondents shall commence and perform the Focused RI in accordance with the schedule contained in the Department-approved Focused RI/FS Work Plan which is attached to this Order as Appendix "B" and made an enforceable part of this Order.

B. During the performance of the field activities undertaken pursuant to the Focused RI, Respondents shall have on-Site at all times a representative who is qualified to supervise such field activities.

C. Within the time frame set forth in the Department-approved Focused RI/FS Work Plan, Respondents shall submit to the Department a Focused Remedial Investigation Report ("FRI Report") that shall:

(1) include a description of all work performed during implementation of the Department-approved Focused RI/FS Work Plan and all data generated and all other relevant information obtained during the Focused Remedial Investigation;

(2) provide all of the assessments and evaluations set forth in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, ("CERCLA") [42 USC 9601 *et seq.*], the National Contingency Plan ("NCP") of March 8, 1990, the United States Environmental Protection Agency ("USEPA") guidance document entitled "Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA," dated October 1988 and any revisions to that guidance document in effect at the time the Focused RI Work Plan was submitted, and appropriate USEPA and Department technical and administrative guidance documents;

(3) identify any additional data that must be collected; and

(4) include a certification by the individual or firm with responsibility for the day to day performance of the Focused RI that all activities that comprised the Focused RI were performed in full accordance with the Department-approved Focused RI/FS Work Plan.

D. If, after review of the FRI Report by the Department, the Department notifies Respondents that additional data is needed to fully characterize the nature and extent of contamination on-Site and/or off-Site, then Respondents shall submit a supplemental Investigation Work Plan to the Department for review. Respondents shall submit the Supplemental Investigation Work Plan within sixty (60) days of receipt by Respondents of the Department's written notification that additional data is required. At the conclusion of the work required under the Supplemental Investigation Work Plan, Respondents shall submit a Supplemental Investigation Report which includes all of the data and information described in Subparagraph II.C of this Agreement.

III. Feasibility Study

A. In accordance with the schedule set forth in the Department-approved Focused RI/FS Work Plan, Respondents shall submit a complete Feasibility Study ("FS") evaluating on-Site and off-Site remedial actions to eliminate and/or control, to the maximum extent practicable, all health and environmental hazards and potential hazards at the Site. The FS shall be prepared by and have the signature and seal of a professional engineer who shall certify that the FS was prepared in accordance with this Order.

B. Respondents shall perform and prepare the FS in accordance with the Department-approved Focused RI/FS Work Plan and in a manner consistent with CERCLA, the NCP, and the guidance documents identified in Subparagraph II.C.2.

C. After the Department's approval of the FS, Respondents shall cooperate and assist the Department in soliciting public comment on the proposed remedial action plan selected by the Department, in accordance with CERCLA, the NCP, the guidance documents identified in Subparagraph II.C.2, and with any Department policy and guidance documents in effect at the time the public comment period is initiated.

IV. Interim Remedial Measures

- A. 1. Respondents may propose one or more IRMs for the Site including IRMs that may be conducted prior to completion of the RI/FS.
2. In proposing each IRM, Respondents shall submit to the Department a work plan that includes a chronological description of the anticipated IRM activities together with a schedule for performance ("IRM Work Plan").
3. Upon the Department's determination that the proposal is an appropriate IRM and upon the Department's approval of such work plan, the IRM Work Plan shall be incorporated into and become an enforceable part of this Order and Respondents shall submit to the Department for its review and approval in accordance with the schedule contained in the Department-approved IRM Work Plan, detail documents and specifications prepared, signed, and sealed by a professional engineer to implement the Department-approved IRM. Such documents shall include a health and safety plan, contingency plan, and if required, a citizen participation plan that incorporates appropriate activities as outlined in the Department's publication, "New York State Inactive Hazardous Waste Citizen Participation Plan," dated June 1998, and any subsequent revisions thereto, and 6 NYCRR Part 375. Respondents shall then carry out such IRM in accordance with the Department-approved IRM Work Plan, detailed documents and specifications, and this Order. Respondents shall notify the Department of any significant difficulties that may be encountered in implementing the Department-approved IRM Work Plan, detailed documents, or specifications and shall not modify any obligation unless approved by the Department.
4. During implementation of all construction activities identified in the Department-approved IRM Work Plan, Respondents shall have on-Site at all times a representative who is qualified to supervise the work done.
5. Within the schedule contained in the Department-approved IRM Work Plan, Respondents shall submit to the Department a final engineering report

prepared by a professional engineer that includes a certification by that individual that all activities that comprised the IRM were completed in accordance with the Department-approved IRM Work Plan and this Order.

a. If the performance of the IRM encompasses construction activities, the final engineering report also shall include a detailed post-remedial operation and maintenance plan ("IRM O&M Plan"); "as-built" drawings and a final engineering report (each including all changes made to the Remedial Design during construction); and a certification by a professional engineer that the IRM was implemented and all construction activities were completed in accordance with the Department-approved detailed documents and specifications for the IRM and all such activities were personally witnessed by him or her or by a person under his or her direct supervision. The IRM O&M Plan, "as built" drawings, final engineering report, and certification must be prepared, signed, and sealed by a professional engineer.

b. Upon the Department's approval of the IRM O&M Plan, Respondents shall implement the IRM O&M Plan in accordance with the requirements of the Department-approved IRM O&M Plan.

6. After receipt of the final engineering report and certification, the Department shall notify Respondents whether the Department is satisfied that the IRM was completed according to the Department-approved IRM Work Plan and design.

V. Progress Reports

Respondents shall submit to the parties identified in Subparagraph XIII.B, copies of written monthly progress reports that:

- A. describe the actions which have been taken toward achieving compliance with this Order during the previous month;
- B. include all results of sampling and tests and all other data received or generated by Respondents or Respondents' contractors or agents in the previous month,

including quality assurance/quality control information, whether conducted pursuant to this Order or conducted independently by Respondents;

C. identify all work plans, reports, and other deliverables required by this Order that were completed and submitted during the previous month;

D. describe all actions, including, but not limited to, data collection and implementation of work plans, that are scheduled for the next month and provide other information relating to the progress at the Site;

E. include information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the implementation of Respondents' obligations under the Order, and efforts made to mitigate those delays;

F. include any modifications to any work plans that Respondents have proposed to the Department or that the Department has approved; and

G. describe all activities undertaken in support of the Citizen Participation Plan during the previous month and those to be undertaken in the next month. Respondents shall submit these progress reports to the Department by the tenth day of every month following the effective date of this Order.

H. Respondents also shall allow the Department to attend, and shall provide at least seven (7) days advance notice to the Department of any of the following: prebid meetings, job progress meetings, substantial completion meeting and inspection, and final inspection and meeting.

VI. Review of Submittals

A. 1. The Department shall review each of the submittals Respondents make pursuant to this Order to determine whether it was prepared, and whether the work done to generate the data and other information in the submittal was done, in accordance with this Order and generally accepted technical and scientific principles. The Department shall notify Respondents in writing of its approval or disapproval of the

submittal and all Department-approved submittals shall be incorporated into and become an enforceable part of this Order.

B. 1. If the Department disapproves a submittal, it shall so notify Respondents in writing and shall specify the reasons for its disapproval. Within forty-five (45) days after receiving written notice that Respondents' submittal has been disapproved, Respondents shall make a revised submittal to the Department that addresses all of the Department's stated reasons for disapproving the first submittal.

2. After receipt of the revised submittal, the Department shall notify Respondents in writing of its approval or disapproval. If the Department approves the revised submittal, it shall be incorporated into and become an enforceable part of this Order. If the Department disapproves the revised submittal, Respondents shall be in violation of this Order unless, within ten (10) days of receipt of the Department's notice of disapproval, Respondents serve upon the Department a request for the appointment of an Administrative Law Judge ("ALJ") who shall establish procedures to review the matter in dispute and issue a decision. The ALJ's decision shall constitute a final agency action for purposes of judicial review pursuant to Article 78 of the CPLR. If Respondents disagree with the ALJ's decision, Respondents shall have the right to seek judicial review of the ALJ's decision under Article 78 of the CPLR if Respondents commence such a proceeding no later than thirty (30) days after receipt of a copy of the ALJ's decision.

VII. Penalties

A. Subject to the provisions of Subparagraph VI.B.2, Respondents' failure to comply with any term of this Order constitutes a violation of this Order and the ECL. The Department shall not seek any penalties or other relief for failure to comply with this Order during the period of time accorded to Respondents to invoke the dispute resolution mechanisms set forth in Subparagraph VI.B.2 and the period of time that a dispute between the Department and Respondents is pending before an ALJ or a court of

competent jurisdiction pursuant to Subparagraph VI.B.2. Respondents shall have ten (10) days to comply with any adverse determination by an ALJ or a court of competent jurisdiction. In the event that Respondents fail to comply with any such determination within ten (10) days, Respondents shall be in violation of this Order and the Department may take any action or pursue any remedy it has pursuant to any provision of statutory or common law.

B. Respondents shall not suffer any penalty under this Order or be subject to any action or proceeding if it cannot comply with any requirement hereof because of war, riot, or an unforeseeable disaster arising exclusively from natural causes which the exercise of ordinary human prudence could not have prevented. Respondents shall, within five (5) days of when it obtains knowledge of any such condition, notify the Department in writing. Respondents shall include in such notification the measures taken and to be taken by Respondents to prevent or minimize any delays and shall request an appropriate extension or modification of this Order. Failure to give such notice within such five (5) day period constitutes a waiver of any claim that a delay is not subject to penalties. Respondents shall have the burden of proving that an event is a defense to compliance pursuant to this subparagraph.

VIII. Entry upon Site

Respondents hereby consent to the entry upon the Site or areas in the vicinity of the Site which may be under the control of Respondents by any duly designated employee, consultant, contractor, or agent of the Department or any State agency for purposes of inspection, sampling, testing and ensuring Respondents's compliance with this Order. The Department shall assist Respondents in obtaining access to an area adjoining the site to perform an aspect of the remedial program if Respondents have first utilized reasonable efforts to gain access to an adjoining area without success. During Remedial Construction, Respondents shall provide the Department with suitable office

space at the Site, including access to a telephone, and shall permit the Department full access to all records relating to matters addressed by this Order and to job meetings.

IX. Payment of State Costs

Within thirty (30) days after receipt of an itemized invoice from the Department, Respondents shall pay to the Department a sum of money, not to exceed \$50,000.00 (excluding costs associated with any IRMs that may be undertaken in accordance with Paragraph IV herein, which IRM related costs may be capped at an agreed upon amount once IRM work plans are submitted), which shall represent reimbursement for the State's response costs and expenses including, but not limited to, direct labor, fringe benefits, indirect costs, travel, analytical costs, and contractor costs incurred by the State of New York for work related to the Site, as well as for reviewing and revising submittals made pursuant to this Order, overseeing activities conducted pursuant to this Order, collecting and analyzing samples, and administrative costs associated with this Order. Such payment shall be made by certified check payable to the Department of Environmental Conservation and shall be sent to:

Bureau of Program Management
Division of Environmental Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, NY 12233-7010.

Personal service costs shall be documented by reports of Direct Personal Service, which shall identify the employee name, title, biweekly salary, and time spent (in hours) on the project during the billing period, as identified by an assigned time and activity code. Approved agency fringe benefit and indirect cost rates shall be applied. Non-personal service costs shall be summarized by category of expense (e.g., supplies, travel, contractual) and shall be documented by expenditure reports.

X. Department Reservation of Rights

A. Nothing in this Order shall be construed as barring, diminishing, or in any way affecting any of the Department's civil, criminal, or administrative rights or authorities.

B. Nothing in this Order shall be construed to prohibit the Commissioner or his duly authorized representative from exercising any summary abatement powers.

XI. Indemnification

Respondents shall indemnify and hold the Department, the State of New York, and their representatives and employees harmless for all claims, suits, actions, damages, and costs of every name and description arising out of or resulting from the fulfillment or attempted fulfillment of this Order by Respondents and/or any of Respondents' directors, officers, employees, servants, agents, successors, and assigns.

XII. Public Notice

A. Within thirty (30) days after the effective date of this Order, Respondent WSI shall file a Declaration of Covenants and Restrictions with the St. Lawrence County Clerk to give of this Order to any party who may acquire an interest in this Site.

B. If Respondent WSI proposes to convey the whole or any part of Respondent WSI's ownership interest in the Site, Respondent WSI shall, not fewer than sixty (60) days before the date of conveyance, notify the Department in writing of the identity of the transferee and of the nature and proposed date of the conveyance and shall notify the transferee in writing, with a copy to the Department, of the applicability of this Order.

XIII. Communications

A. All written communications required by this Order shall be made by United States Postal Service, by private courier service, or hand delivered as follows:

1. Communication from Respondents shall be sent to:

Darrell Sweredoski, P.E.
New York State Department of Environmental Conservation
Division of Environmental Remediation
State Office Building
Watertown, New York 13601

with copies to:

G. Anders Carlson, Ph.D
Director, Bureau of Environmental Exposure Investigation
New York State Department of Health
Flanagan Square
547 River Street
Troy, New York 12180

Central Field Unit Leader
NYSDEC
Division of Environmental Enforcement
50 Wolf Road, Room 627
Albany, New York 12233-5500

2. Communications to Respondents shall be sent to:

Richard Brickwedde, Esq.
Green & Seifter
One Lincoln Center
Syracuse, NY 13202

Don A. Schiemann, Esq.
General Motors Corporation
New Center One Building
Mail Code 482-208-815
3031 West Grand Blvd.
Detroit, MI 48202

William J. Holzhauer, Esq.
Niagara Mohawk Power Corporation
300 Erie Blvd. West
Syracuse, NY 13202

Richard R. Capozza, Esq.
Hiscock & Barclay
221 S. Warren St.,
Syracuse, NY 13221-4878

William Stephens, Esq.
Raichle, Banning, Weiss & Stephens
410 Main St.
Buffalo, NY 14202

B. Copies of work plans and reports shall be submitted as follows:

- Two copies (one unbound) to Mr. Sweredoski
- Two copies to Dr. Carlson

C. 1. Within thirty (30) days of the Department's approval of any report submitted pursuant to this Order, Respondents shall submit to Mr. Sweredoski a computer readable magnetic media copy of the approved report in American Standard Code for Information Interchange (ASCII) format.

2. Within thirty (30) days after the Department's approval of either the Focused RI report or the Feasibility Study, Respondents shall submit one copy of each report to Mr. Sweredoski on either a 3-1/2" computer diskette, or compact disk, in a software format(s) compatible with the Department's. Copies of the report shall include all text, figures, drawings, and all software files to make up a complete report. If more than one file is used, Respondents shall include an index identifying the contents of the individual files.

D. The Department and Respondents reserve the right to designate additional or different addressees for communication or written notice to the other.

XIV. Miscellaneous

A. Any outstanding remedial obligations of Respondents GM and WSI under the Order on Consent dated April 30, 1990 (Index # A6-0222-09-02) for this same Site (#645022) will be superseded by the terms of this Order; all other outstanding obligations of Respondents GM and WSI shall remain in full force and effect.

B. All activities and submittals required by this Order shall address both on-Site and off-Site contamination resulting from the disposal of hazardous wastes at the Site.

C. Respondents shall retain professional consultants, laboratories, quality assurance/quality control personnel, and third party data validators acceptable to the Department to perform the technical and analytical obligations required by this Order. The qualifications of the firms or individuals selected by Respondents shall be submitted to the Department within thirty (30) days after the effective date of this Order. The Department's approval of these firms or individuals shall be obtained before the start of any activities for which Respondents and such firms or individuals will be responsible. The responsibility for the performance of the professionals retained by Respondents shall rest solely with Respondents.

D. The Department shall have the right to obtain split samples, duplicate samples, or both, of all substances and materials sampled by Respondents, as well as the right to take its own samples. Respondents shall make available to the Department the results of all sampling and data generated by Respondents with respect to implementation of this Order and shall submit these results in the progress reports required by this Order.

E. Respondents shall notify the Department at least ten (10) working days in advance of any field activities to be conducted pursuant to this Order.

F. Respondents shall use their best efforts to obtain all permits, easements, rights-of-entry, approvals, or authorizations necessary to perform Respondents' obligations under this Order.

G. Respondents and Respondents' officers, directors, agents, servants, employees, successors, and assigns shall be bound by this Order. Any change in ownership or corporate status of Respondents including, but not limited to, any transfer of assets or real or personal property shall in no way alter Respondents' responsibilities under this Order. Respondents' employees, servants, and agents shall be obliged to comply with the relevant provisions of this Order in the performance of their designated duties on behalf of Respondents.

H. Respondents shall provide a copy of this Order to each contractor hired to perform the work required by this Order and to each person representing Respondents

with respect to the Site and shall condition all contracts entered into in order to carry out the obligations identified in this Order upon performance in conformity with the terms of this Order. Respondents or Respondents' contractors shall provide written notice of this Order to all subcontractors hired to perform any portion of the work required by this Order. Respondents shall nonetheless be responsible for ensuring that Respondents' contractors and subcontractors perform the work in satisfaction of the requirements of this Order.

I. All references to "professional engineer" in this Order are to an individual registered as a professional engineer in accordance with Article 145 of the New York State Education Law. If such individual is a member of a firm, that firm must be authorized to offer professional engineering services in the State of New York in accordance with Article 145 of the New York State Education Law.

J. All references to "days" in this Order are to calendar days unless otherwise specified.

K. The paragraph headings set forth in this Order are included for convenience of reference only and shall be disregarded in the construction and interpretation of any of the provisions of this Order.

L. 1. No term, condition, understanding, or agreement purporting to modify or vary any term of this Order shall be binding unless made in writing and subscribed by the party to be bound. No informal advice, guidance, or comment by the Department regarding any report, proposal, plan, specification, schedule, or any other submittal shall be construed as relieving Respondents of Respondents' obligation to obtain such formal approvals as may be required by this Order.

2. If Respondents desire that any provision of this Order be changed, Respondents shall make timely written application, signed by Respondents, to the Commissioner setting forth reasonable grounds for the relief sought. Copies of such written application shall be mailed to Mr. Sweredoski and to the Field Unit Leader.

M. Except as otherwise provided in this Order, the obligations of Respondents to finance and perform obligations under this Order are joint and several. In the event of

the insolvency or failure of any or more of Respondents to implement any obligation of this Order, the remaining Respondents shall complete all such requirements.

N. This Agreement may be executed in counterparts, and each one shall be treated as an original.

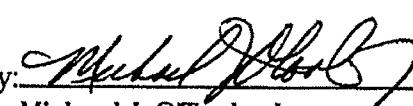
O. The effective date of this Order is the fifth day after the date that the Commissioner or his designee signs it.

DATED: Albany, New York

12/20 2000

JOHN P. CAHILL, COMMISSIONER
New York State Department
of Environmental Conservation

By:


Michael J. O'Toole, Jr.
Director, Division Of Environmental Remediation

CONSENT BY RESPONDENT

Respondent, Waste Stream, Inc., hereby consents to the issuing and entering of this Order, waives its right to a hearing herein as provided by law, and agrees to be bound by this Order.

By: Jerry S. Cifor

Title: V.P. / Treasurer

Date: 12/6/00

Vermont
STATE OF NEW YORK)
COUNTY OF Rutland) s.s.:)

On the 11th day of Dec., in the year 2000, before me, the undersigned, personally appeared Jerry S. Cifor, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies) as V.P & Treasurer, and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Anne L. Cheneau
Signature and Office of individual
taking acknowledgment

2/10/03

CONSENT BY RESPONDENT

Respondent, General Motors Corporation, hereby consents to the issuing and entering of this Order, waives its right to a hearing herein as provided by law, and agrees to be bound by this Order.

By: Don A. Schiemann

Title: Attorney

Date: October 30, 2000

STATE OF NEW YORK)
) s.s.:
COUNTY OF)

On the 30th day of October, in the year 2000, before me, the undersigned, personally appeared Don A. Schiemann, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies) as Attorney, and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

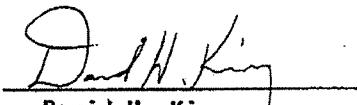
Carolyn E Stoehr
Signature and Office of individual
taking acknowledgment

CAROLYN E STOEHRS
Notary Public, Wayne County, MI
My Commission Expires Jul 9, 2004

CONSENT BY RESPONDENT

Respondent, Niagara Mohawk Power Corporation, hereby consents to the issuing and entering of this Order, waives its right to a hearing herein as provided by law, and agrees to be bound by this Order.

By:



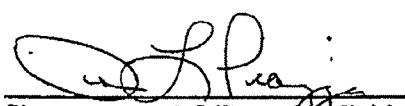
David H. King
Executive Director

Title:

Date: October 25, 2000

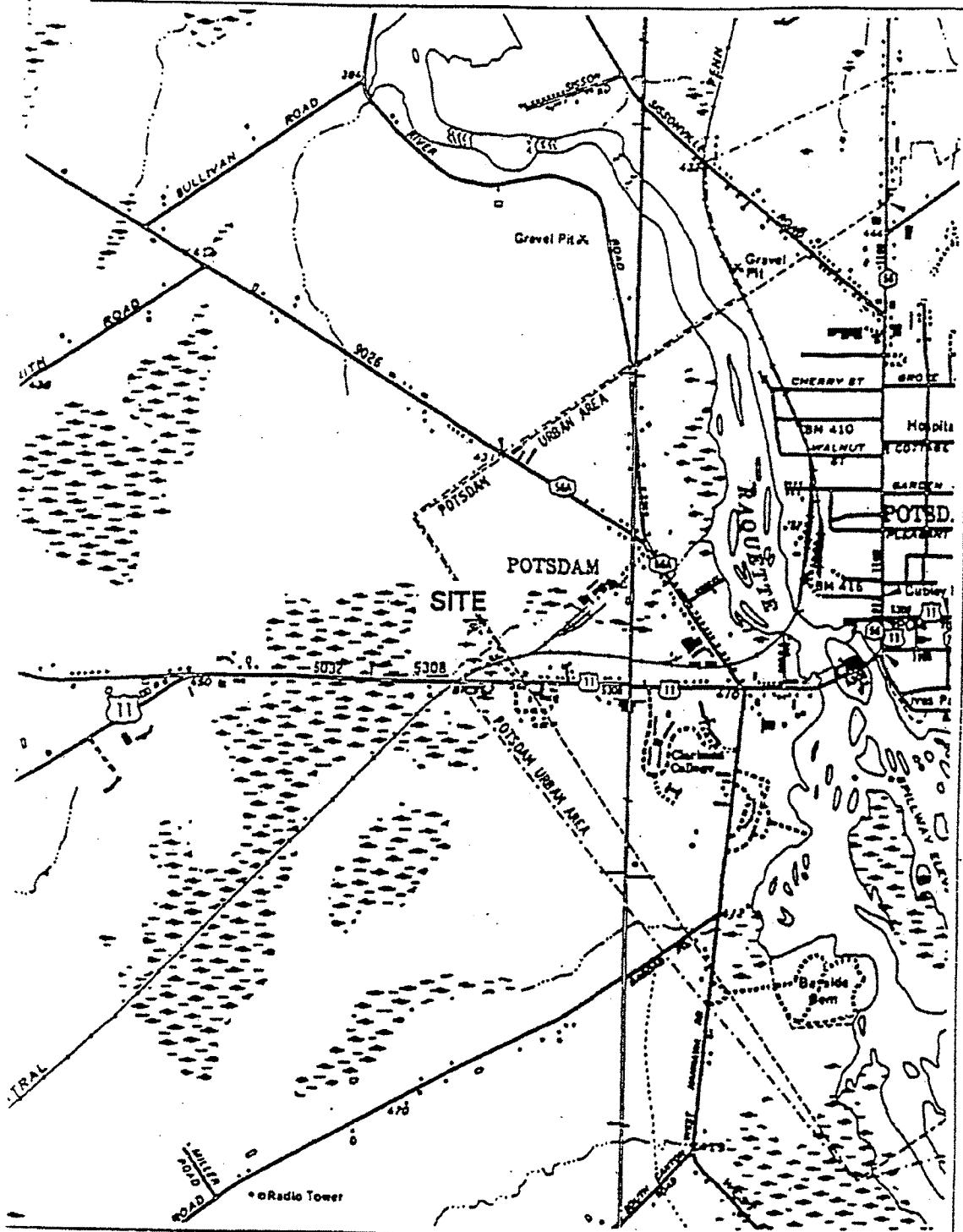
STATE OF NEW YORK)
) s.s.:
COUNTY OF ONONDAGA)

On the 25th day of October, in the year 2000, before me, the undersigned, personally appeared David H. King, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is xxxxxx subscribed to the within instrument and acknowledged to me that he/she xxxxxx executed the same in his/her xxxxxx capacity(xx) as Exec. Director, and that by his/her xxxxxx signature(xx) on the instrument, the individual(xx), or the person upon behalf of which the individual(xx) acted, executed the instrument.



Signature and Office of individual
taking acknowledgment

VICKI L. WILLIAMS-#19224
Notary Public in the State of New York
Qualified in Onondaga County, No. 4848074
My Commission Expires March 30, 2001



Location Map

5-1022 Waste Stream Inc.
WYSDOT Planimetric Quadrangle(s):
WEST POTSDAM, POTSDAM



0 500 1000 1500 2000

ANSWER

Scale 1:24,000

EXHIBIT C

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Executive Summary

Introduction

This Feasibility Study (FS) Report presents an evaluation of remedial alternatives to address environmental impacts identified at the Waste-Stream, Inc. (WSI) site (Site #6-45-022) located in Potsdam, New York. This FS Report has been prepared by ARCADIS U.S., Inc. (ARCADIS) on behalf of the WSI Group. Members of the WSI Group include WSI, National Grid, and General Motors Corporation (GM). The FS has been conducted in accordance with an Order on Consent (Index #A6-0399-9911) between the WSI Group and the New York State Department of Environmental Conservation (NYSDEC), which became effective on December 22, 2000.

This FS Report has been prepared to evaluate remedial alternatives to address environmental impacts at the site in a manner consistent with the Order on Consent and with the following documents:

- NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4025 titled, *Guidelines for Remedial Investigations/Feasibility Studies* (NYSDEC, 1989).
- NYSDEC TAGM #4030 titled, *Selection of Remedial Actions at Inactive Hazardous Waste Sites* (NYSDEC, 1990).
- United States Environmental Protection Agency (USEPA) guidance document titled, *Guidance for Conducting Remedial Investigations and Feasibility Studies Under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*, Interim Final (USEPA, 1988).
- USEPA guidance document entitled, *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (USEPA, 2005a).
- Applicable provisions of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) regulations contained in Title 40 of the Code of Federal Regulations (CFR) Part 300.
- Applicable provisions of the New York State Environmental Conservation Law (ECL) and associated regulations, including Title 6 of the New York Code of Rules and Regulations (NYCRR) Part 375 (6NYCRR Part 375).

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- NYSDEC *Draft DER-10 Technical Guidance for Site Investigation and Remediation* (NYSDEC, 2002).

The purpose of this FS Report is to identify and evaluate remedial alternatives that are:

- Appropriate for site-specific conditions
- Protective of human health and the environment
- Consistent with relevant sections of NYSDEC guidance, the NCP, and CERCLA

The overall objective of this FS Report is to recommend an appropriate remedial alternative that satisfies the remedial action objectives (RAOs) established for the site.

Background

The WSI site consists of the WSI property, areas immediately adjacent to the WSI property, the wetlands located northeast of the property (referred to as the northern drainage area [NDA]), and the drainage swale that conveys stormwater runoff from the WSI property to the NDA. The WSI property is an active scrap yard located at 147 Outer Maple Street (U.S. Route 11) in the Town and Village of Potsdam, St. Lawrence County, New York. The WSI property consists of two parcels that comprise an area of approximately 29.2 acres. The Focused RI activities concentrated on an approximately 10-acre developed area located in the southern portion of Parcel No. 2 where scrapyard operations were formerly or are currently being conducted.

The WSI property is occupied by several structures, including a scale house, maintenance building, office building, storage barn, tin press, former solid waste transfer station (which has not operated since November 2001), a former above ground fuel storage tank area, and various outbuildings. Various scrap processing equipment (large hydraulic shear, car crusher, etc.) are also located at the site. Scrap storage piles and material staging areas (for roll-off containers, trailers, etc.) previously occupied portions of the operations area at the site.

The WSI property has operated as a metal recycling facility and scrap yard since approximately 1957, initially as Chet Bisnett and subsequently by Chet Bisnett, Inc. (CBI). CBI merged with B&C Carting in 1987 and the resulting company was renamed Waste Stream Management, Inc. (WSMI). WSMI was subsequently renamed Waste-

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Stream Inc. (WSI) and has operated the site from 1987 until the present. In 1998, WSI became a wholly owned subsidiary of Casella Waste Systems, Inc.

Prior to the mid-1960s, operations were primarily conducted within the southern portion of the property. During the period between the mid-1960s and mid-1970s, facility operations shifted toward the north (extending just north of the former solid waste transfer station). Site activities conducted during this period reportedly included tin press operations, metal shearing, car crushing, and scrap metal processing. During this period, the facility reportedly processed scrap electrical transformers that contained polychlorinated biphenyl- (PCB-) containing dielectric fluids (mineral oil). The transformers were reportedly drained for subsequent recycling/wire recovery. The transformer recycling/wire recovery activities were conducted in an area north of the existing tin press operation. During the period between the mid-1960s and mid-1970s, the facility also reportedly processed scrap manufacturing equipment that had fluid reservoirs with PCB-containing oils. The manufacturing equipment that was brought to the site during this period was staged and processed (including disassembly and cutting) in an area southwest of the maintenance shop.

Environmental Impacts

The investigation activities and results were presented in the following NYSDEC-approved reports:

- *Remedial Investigation/Feasibility Study Work Plan* (Revision 1.0), September 2000, InteGreyted Consultants, LLC (InteGreyted, 2000).
- *Focused Remedial Investigation Report* (Focused RI Report) (ARCADIS, 2003).
- *Supplemental Remedial Investigation Report* (Supplemental RI Report) (ARCADIS, 2006).

PCBs are the primary constituent of concern (COC) in surface and subsurface soil and sediment at the site. Additional COCs include volatile organic compounds (VOCs) (in groundwater), semi-volatile organic compounds (SVOCs) (primarily polynuclear aromatic hydrocarbons [PAHs]) and inorganic constituents.

Analytical results for soil samples collected as part of the remedial investigation were initially screened against the soil cleanup objectives presented in the NYSDEC Division of Hazardous Waste Remediation Document entitled "Technical and Administrative

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Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels" HWR 94-4046 (TAGM 4046), dated January 24, 1994 (NYSDEC, 1994a). With its adoption in December 2006, the soil cleanup objectives in 6NYCRR Part 375-6 replaced TAGM 4046. 6NYCRR Part 375-6 provides soil cleanup objectives that are protective of human health and the environment based on current and foreseeable future use of the subject property. The foreseeable use of this site is continued use as an industrial site, namely a scrap yard for select materials (non-ferrous metals) and as a transfer station for materials/equipment to be managed at other WSI facilities. Operations at the site are conducted in accordance with a Site Operations Plan prepared by InteGreyted. The areas surrounding the property include wooded, wetland and residential areas.

Remedial Action Objectives

RAOs are medium-specific goals that result in the protection of human health and the environment. The RAOs were used to evaluate potential remedial options relative to their capacity to protect human health and the environment considering exposure pathways and applicable standards, criteria, and guidelines (SCGs).

The RAOs for the site, in consideration of COCs, exposure pathways, and receptors, are presented in the following table.

Environmental Media	COCs	Remedial Action Objective
Surface and Subsurface Soil	<ul style="list-style-type: none">PCBsSVOCs (PAHs)Inorganics	<p>Eliminate or mitigate, to the extent practicable and feasible:</p> <ul style="list-style-type: none">Direct contact/inhalation of impacted soil by current site workers, future site workers, off-site receptors and trespassers.Direct contact/inhalation of contaminants in dust generated from soils by off-site receptors/residents and trespassers.The potential for migration of contaminants in soil to groundwater.

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Environmental Media	COCs	Remedial Action Objective
		<ul style="list-style-type: none"> Off-site migration of contaminants in soil via surface water runoff. Impacts to biota from ingestion/direct contact or bioaccumulation through the terrestrial food chain.
Groundwater	<ul style="list-style-type: none"> PCBs VOCs (primarily benzene, toluene, ethylbenzene, and xylene [BTEX], 1,2-Dichloroethane and vinyl chloride) 	<p>Eliminate or mitigate, to the extent practicable and feasible:</p> <ul style="list-style-type: none"> Dermal contact with impacted groundwater by site workers, site visitors and trespassers. Ingestion of impacted groundwater by site workers and site visitors. Off-site migration of contaminants via groundwater.
Sediment	<ul style="list-style-type: none"> PCBs SVOCs (primarily PAHs) Inorganics 	<p>Eliminate or mitigate, to the extent practicable and feasible:</p> <ul style="list-style-type: none"> Impacts to biota from ingestion of impacted sediments or from bioaccumulation through uptake through the aquatic food chain.

Remedial Technology Screening and Development of Remedial Alternatives

General response actions (GRAs) were identified to address impacted site media. GRAs are medium-specific and describe actions that will satisfy the RAOs, and may include various actions such as treatment, containment, institutional controls, excavation, or any combination of such actions.

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Potentially applicable technologies and technology process options associated with each of the GRAs underwent preliminary and secondary screening to select the technologies that would most-effectively achieve the RAOs identified for the site. The preliminary screening was performed to reduce the number of potentially applicable technologies and technology processes based on technical implementability. This screening was based on several considerations, including: successful full-scale demonstrations of the technology; compatibility of the technology with the specific media, location, and constituent distribution; time-frame to acquire necessary permits; and area required for setup/operation. To further reduce the technology processes to be assembled into remedial alternatives, the technology processes were subjected to a secondary screening. The objective of the secondary screening was to choose, when possible, one representative remedial technology process for each remedial technology category to simplify the subsequent development and evaluation of the remedial alternatives.

Technologies/process options that were retained following the screening were used to develop remedial alternatives. Consideration was given to the NCP (40 CFR Part 300.430), which indicates the following range of alternatives should be developed to the extent practical:

- The "No-Action" alternative.
- Alternatives that provide protection of human health and the environment by preventing or minimizing exposure to the COCs through the use of containment options and/or institutional controls.
- Alternatives that remove COCs to the extent possible, thereby minimizing the need for long-term management.
- Alternatives that treat the COCs but vary in the degree of treatment employed and long-term management needed.

Detailed Evaluation of Remedial Alternatives

Following preliminary and secondary screening, and the development of the media-specific remedial alternatives, a detailed description of each remedial alternative was prepared and evaluated with respect to the criteria presented in the NYSDEC guidance for Feasibility Studies in TAGM 4030 (NYSDEC, 1990) and "Guidance for

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Conducting Remedial Investigations and Feasibility Studies under CERCLA" (USEPA, 1988).

- Short-Term Effectiveness
- Long-Term Effectiveness and Permanence
- Reduction of Toxicity, Mobility, or Volume
- Implementability
- Compliance with SCGs
- Overall Protection of Human Health and the Environment
- Cost

These evaluation criteria encompass statutory requirements and include other gauges such as overall feasibility.

Following completion of the detailed evaluation of each remedial alternative, a comparative analysis using the seven criteria was completed. The comparative analysis identifies the advantages and disadvantages of each alternative relative to each other and with respect to the seven criteria. The results of the comparative analysis were used as a basis for recommending preferred media-specific remedial alternatives for addressing the RAOs established for the site.

Preferred Site-Wide Remedy

The evaluation of the alternative for remediation of soil, groundwater, and wetland sediment at the site was completed in accordance with the procedures outlined in NYSDEC TAGM 4030 as well as USEPA guidance for the completion of feasibility studies in accordance with CERCLA and the NCP.

Based on the comparative analysis of the soil, groundwater, and sediment alternatives presented in Section 6, the preferred site-wide remedy consists of Alternatives S4, GW3, and SD3. This site-wide remedy would cost-effectively achieve the best balance of the seven NYSDEC evaluation criteria and would achieve the site-specific RAOs in a reasonable time frame. This remedy represents a permanent reduction in the toxicity,

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mobility, and volume of soil and sediment containing elevated concentrations of PCBs; mitigates potential exposure to remaining material containing PCBs through construction of a cap; and documents potential permanent reduction (via natural processes) in the toxicity, mobility, and volume of VOCs in site groundwater.

As detailed in respective subsections of Section 5, the primary components of the preferred site-wide remedy consist of the following:

- Excavating approximately 4,500 CY of soil beyond the WSI property boundary containing COCs at concentrations greater than ecological SCOs and backfilling excavation areas with imported material that meets those soil cleanup objectives.
- Excavating approximately 5,300 CY of soil containing PCBs at concentrations greater than 50 ppm within the WSI property boundary.
- Excavating approximately 14,700 CY of sediment such that the average PCB concentration in remaining sediments is less than 1 ppm.
- Managing approximately 5,400 CY of soil containing PCBs at concentrations greater than or equal to 50 ppm as a TSCA-regulated/NYS hazardous waste at an off-site RCRA Subtitle C Landfill.
- Managing approximately 4,900 CY of sediment containing PCBs at concentrations greater than or equal to 50 ppm as a TSCA-regulated/NYS hazardous waste at an off-site RCRA Subtitle C Landfill.
- Consolidating approximately 4,400 CY of soil containing PCBs at concentrations less than 50 ppm on-site.
- Consolidating approximately 9,800 CY of sediment containing PCBs at concentrations less than 50 ppm on-site.
- Constructing a cap over consolidated materials and remaining impacted soils containing PCBs at concentrations greater than ecological SCOs.
- Abandoning existing monitoring wells and installing up to 10 new groundwater monitoring wells at locations both upgradient and downgradient from areas at the site where dissolved-phase COCs were detected during the RI.

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- Backfilling the southern drainage areas with rip-rap stone to prevent (to the extent practicable) vegetation re-establishment or wildlife habitation.
- Restoring the northern drainage area via the importation and placement of general fill, topsoil, wetland seed mixtures, shrubs, and trees.
- Implementing institutional controls in the form of deed restrictions to prevent current or future site owners from conducting activities that would potentially jeopardize the integrity of the cap.
- Implementing institutional controls in the form of deed restrictions, groundwater use restrictions, and continued supply of bottled water for potable use to limit the use of site groundwater.
- Implementing institutional controls in the form of deed restrictions to prevent current or future site owners from conducting activities that result in exposure to remaining PCB-impacted sediment.
- Conducting annual inspections to monitor the cap for erosion or other damage and repairing of the cap, as needed.
- Conducting annual groundwater monitoring to document the reduction of COC concentrations in site groundwater and to verify impacted groundwater is not migrating further downgradient.
- Conducting annual wetland vegetation monitoring to document that wetlands have been re-established and the northern drainage area is capable of supporting the aquatic and terrestrial wildlife that is present prior to the implementation of the remedial alternative.
- Conducting biennial biota monitoring that includes submitting biota samples for PCBs and lipids content to assess the effectiveness of this remedial alternative.

The total estimated cost associated with implementation of the preferred site-wide remedy is summarized in the following table..

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Cost	Estimated Amount
Estimated Capital Cost	\$9,780,000
Estimated 30-Year Present Worth of O&M Cost	\$950,000
Total Estimated Present Worth Cost	\$10,730,000

Table 5-1
 Cost Estimate for Alternative S2 - Institutional Controls

WSI - Waste-Stream, Inc. Site - Potsdam, New York

Item #	Description	Estimated Quantity	Unit	Unit Price (materials and labor)	Estimated Amount
CAPITAL COSTS					
1	Legal Expenses for Institutional Controls	1	LS	\$50,000	\$50,000
2	Permanent Site Fencing	4,000	LF	\$35	\$140,000
				Total Capital Cost	\$190,000
				Contingency (20%)	\$38,000
				Subtotal Cost	\$228,000
OPERATION AND MAINTENANCE COSTS (30 YEAR)					
3	Annual Inspection/Maintenance	1	LS	\$6,000	\$6,000
4	Inspection of Institutional Controls and Notifications to NYSDEC	1	LS	\$5,000	\$5,000
				Total O&M Cost	\$11,000
				Contingency (20%)	\$2,200
				Subtotal Cost	\$13,200
5				30-Year Total Present Worth Cost of O&M	\$163,812
				Total Estimated Cost	\$391,812
				Rounded to	\$390,000

General Notes:

1. Cost estimate is based on ARCADIS' past experience and vendor estimates using 2009 dollars.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual projected cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. ARCADIS is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.

Assumptions:

1. Legal expenses for institutional controls cost estimate includes all labor and materials necessary to institute environmental easements and deed restrictions to prevent current or future site workers from performing intrusive on-site activities.
2. Permanent site fencing cost estimate includes all labor, equipment, and materials necessary to purchase and install a six-foot woven steel chain link fence equipped with top rail.
3. Annual inspection/maintenance cost estimate includes all labor, equipment, and materials necessary to conduct annual inspection of new site perimeter fencing and repair/replace up to 100 linear-feet of fencing per year. Cost estimate also includes periodic collection of stormwater samples to comply with current site permits.
4. Inspection of institutional controls and notifications to NYSDEC cost estimate includes Institutional costs associated with implementing Institutional controls to minimize the potential for human exposure to remaining impacted soils. Such Institutional controls may include governmental controls, proprietary controls, enforcement tools, and/or informational devices. Annual costs associated with Institutional controls include verifying the status of Institutional controls and preparing/submitting notification to the NYSDEC to demonstrate that the Institutional controls are being maintained and remain effective.
5. Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation) in accordance with OSWER Directive 9355.3-20 "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis" (USEPA, 1993). It is assumed that "year zero" is 2008.

Table 5-2
 Cost Estimate for Alternative S3 - Capping of Soil Containing COCs > Ecological SCOs
 with Removal of Soil Beyond WSI Property Limits

WSI - Waste-Stream, Inc. Site - Potsdam, New York

Item #	Description	Estimated Quantity	Unit	Unit Price (materials and labor)	Estimated Amount
CAPITAL COSTS					
1	Mobilization/Demobilization	1	LS	\$100,000	\$100,000
2	Utility Location and Markout	1	LS	\$2,000	\$2,000
3	Construct and Remove Equipment Decontamination Pad	1	LS	\$7,500	\$7,500
4	Permanent Site Fencing	4,000	LF	\$35	\$140,000
5	Erosion Control	2,000	LF	\$1	\$2,000
6	Construction and Maintenance of Soil Staging Area	1	LS	\$100,000	\$100,000
7	Soil Excavation and Handling of Excavated Materials	5,000	CY	\$30	\$150,000
8	Soil Excavation Dewatering	2	month	\$5,000	\$10,000
9	Verification Sampling	130	each	\$400	\$52,000
10	Select Fill Importation, Placement, Grading and Compaction (Backfill)	5,000	CY	\$25	\$125,000
11	Site Regrading and Compaction	4,400	CY	\$10	\$44,000
12	Demarcation Layer	71,900	SY	\$1	\$71,900
13	Clay Importation, Placement, Grading and Compaction (Cap)	21,800	CY	\$20	\$436,000
14	Topsoil Importation, Placement, and Grading (Cap)	10,900	CY	\$25	\$272,500
15	Seed, Mulch, and Fertilizer	15.2	acre	\$5,000	\$76,000
16	Stormwater Management	1	LS	\$300,000	\$300,000
17	Solid Waste Characterization	15	each	\$750	\$11,250
18	Liquid Waste Characterization	1	each	\$750	\$750
19	Soil Waste Transportation and Off-Site Management - Solid Waste Landfill	750	ton	\$50	\$37,500
20	Soil Waste Transportation and Off-Site Management - RCRA Landfill	150	ton	\$145	\$21,750
21	Management of Wastewater	20,000	gal	\$0.20	\$4,000
22	Legal Expenses for Institutional Controls	1	LS	\$50,000	\$50,000
					Total Capital Cost \$2,014,150
23					Administration and Engineering (10%) \$195,090
					Construction Management (5%) \$97,545
					Contingency (20%) \$402,830
					Subtotal Cost \$2,709,615
OPERATION AND MAINTENANCE COSTS (30 YEAR)					
24	Annual Monitoring/Maintenance	1	LS	\$10,000	\$10,000
25	Inspection of Institutional Controls and Notifications to NYSDEC	1	LS	\$5,000	\$5,000
					Total O&M Cost \$15,000
					Contingency (20%) \$3,000
					Subtotal Cost \$18,000
26					30-Year Total Present Worth Cost of O&M \$223,380
					Total Estimated Cost \$2,932,995
					Rounded to \$2,900,000

General Notes:

1. Cost estimate is based on ARCADIS' past experience and vendor estimates using 2009 dollars.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual projected cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. ARCADIS is not licensed to provide financial or legal consulting services; as such; this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.

Table 5-2
Cost Estimate for Alternative S3 - Capping of Soil Containing COCs > Ecological SCOs
with Removal of Soil Beyond WSI Property Limits

WSI - Waste-Stream, Inc. Site - Potsdam, New York

Assumptions:

1. Mobilization/demobilization cost estimate includes mobilization and demobilization of all equipment, materials, and labor necessary to facilitate soil excavation and construct a soil cap.
2. Utility location and markout cost estimate includes labor, equipment, and materials necessary to locate, identify, and markout underground utilities at the site. Cost assumes that utility location and markout would be conducted by a private utility locating company over a period of two days at a daily rate of \$1,000 per day.
3. Construct and remove equipment decontamination pad cost estimate includes labor, equipment, and materials necessary to construct and remove a 60-foot by 30-foot decontamination pad and appurtenances. The decontamination pad would consist of 40-mil high-density polyethylene (HDPE) with a six-inch gravel drainage layer placed over the HDPE liner, surrounded by a one-foot high berm and sloped to a collection sump for the collection of decontamination water.
4. Permanent site fencing cost estimate includes all labor, equipment, and materials necessary to purchase and install a six-foot woven steel chain link fence equipped with top rail.
5. Erosion control cost estimate includes all labor, equipment, and materials necessary to purchase and install a three-foot silt fence equipped with stakes 10-foot on-center.
6. Construction and maintenance of soil staging area cost estimate includes labor, equipment, and materials to construct two approximately 100-foot by 100-foot material staging areas consisting of a 12-inch gravel fill layer bermed and sloped to a sump and covered with a 40-mil HDPE liner for the segregation of excavated material. Maintenance costs include inspecting and repairing staging area as necessary and covering staged soil with polyethylene sheeting. Cost assumes construction cost of approximately \$4 per square foot of pad.
7. Soil excavation and handling of excavated materials cost estimate includes all labor, equipment, and materials necessary to excavate material, transfer excavated material to on-site staging area, and load staged material for off-site transportation. Estimated excavation limits and volumes (in-place) based on thiessen polygons created from previously collected site samples. Cost estimate includes air monitoring during excavation activities.
8. Soil excavation dewatering cost estimate includes rental of one frac tank, pumps, and piping. Cost estimate assumes water removed from excavations and material and decontamination areas will be temporarily stored on-site in a frac tank prior to transportation for off-site management.
9. Verification sampling cost estimate includes the laboratory analysis of soil samples collected from soil excavation areas for PCBs, SVOCs, and RCRA metals to verify impacted soil has been removed to proposed soil cleanup objectives. Cost estimate assumes a soil sample is collected every 2,500 square-feet of excavation bottom and every 50 linear-feet of excavation sidewalls.
10. Select fill importation, placement, grading and compaction cost estimate includes all labor, equipment, and materials necessary to purchase, place, grade and compact general fill. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 90% maximum compaction. Cost estimate includes survey verification and compaction testing.
11. Site regrading and compaction cost estimate includes all labor, equipment, and materials necessary to regrade and compact material excavated beyond the WSI property boundary within the WSI property boundary. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 90% maximum compaction. Cost estimate includes survey verification and compaction testing.
12. Demarcation layer cost estimate includes all labor, equipment, and materials necessary to purchase and install light-weight non-woven geotextile material as base layer to provide visual demarcation between clean cover materials and potentially impacted underlying soils. Cost estimate includes an additional 10% of material for folding, wrinkles, and overlaps.
13. Clay importation, placement, grading and compaction cost estimate includes all labor, equipment, and materials necessary to purchase, place, grade and compact clay or other suitable material. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 95% maximum compaction. Cost estimate includes survey verification and compaction testing.

Table 5-2
Cost Estimate for Alternative S3 - Capping of Soil Containing COCs > Ecological SCOs
with Removal of Soil Beyond WSI Property Limits

WSI - Waste-Stream, Inc. Site - Potsdam, New York

14. Top soil importation, placement, and grading cost estimate includes all labor, equipment, and materials necessary to purchase, place, and grade six inches of topsoil.
15. Seed, mulch, and fertilizer cost estimate includes all labor, equipment, and materials necessary to purchase and apply seed, fertilizer, and mulch to site soil. Quantity estimate based on capping area within WSI property boundary and backfilled excavation areas beyond the WSI property boundary.
16. Stormwater management cost estimate includes all labor, equipment, and materials necessary to construct on-site stormwater collection trenches, drainage swales, and stormwater detention basins from management of stormwater runoff during and following remedial activities. Final stormwater management system to be developed during the remedial design phase.
17. Solid waste characterization cost estimate includes the analysis of soil samples (including, but not limited to, PCBs, VOCs, SVOCs, and RCRA Metals). Costs assumes that waste characterization samples would be collected at a frequency of one sample per every 500 tons of excavated material. The estimated weight of material was based on an assumed 1.5 tons per cubic-yard.
18. Liquid waste characterization cost estimate includes the analysis of wastewater sample for PCBs, VOCs, SVOCs, metals, and pesticides. Liquid waste characterization to be conducted in accordance with the requirements provided by off-site management facility.
19. Soil waste transportation and off-site management - solid waste landfill cost estimate includes all labor, equipment, and materials necessary to transport soil containing PCBs at concentrations less than 50 ppm for off-site management at an appropriate landfill. Cost estimate assumes a material density of 1.5 tons per cubic-yard. Cost estimate assumes soil would be management at Seneca Meadows Landfill located in Waterloo, New York. Cost estimate includes transportation fuel charge and all applicable taxes. Cost estimate is based on information provided to ARCADIS by Seneca Meadows Landfill on December 16, 2008.
20. Soil waste transportation and off-site management - RCRA landfill cost estimate includes all labor, equipment, and materials necessary to transport soil containing PCBs at concentrations greater than 50 ppm for off-site management at an appropriately permitted RCRA landfill. Cost estimate assumes a material density of 1.5 tons per cubic-yard. Cost estimate assumes that soil would be managed at Model City Landfill located in Niagara Falls, New York. Cost estimate includes transportation fuel charge, local, and state taxes. Cost estimate is based on information provided to ARCADIS by Waste Management on December 15, 2008.
21. Management of wastewater cost estimate include the transportation and off-site management of water generated during soil excavation activities. Volume estimate includes removal of one pore volume of saturated soil prior to excavation and removal of water from open excavation up to 2 times prior to backfilling.
22. Legal expenses for institutional controls cost estimate includes all labor and materials necessary to institute environmental easements and deed restrictions to prevent current or future site workers from performing activities that would jeopardize the integrity of the multi-media cap.
23. Administration and engineering and construction management costs are based on an assumed 10% and 5% (respectively) of the total capital costs, not including costs for off-site management of material.
24. Annual monitoring/maintenance cost estimate includes all labor, equipment, and materials necessary to maintain the soil cap to prevent soil erosion. Cost estimate includes annual inspection of capped area to verify integrity of the soil cap. Cost estimate assumes annual cap maintenance including placement of up to six inches of topsoil and vegetation for up to 10,000 square-feet of soil cap. Cost estimate also includes annual inspection and repair/replacement of up to 100 linear-feet of new site perimeter fencing. Cost estimate also includes annual inspection and maintenance of stormwater management structures (e.g., ponds, ditches, etc.).
25. Inspection of institutional controls and notifications to NYSDEC cost estimate includes costs associated with implementing institutional controls to prevent current or future site workers from performing activities that would jeopardize the integrity of the soil cap. Such institutional controls may include governmental controls, proprietary controls, enforcement tools, and/or informational devices. Annual costs associated with institutional controls include verifying the status of institutional controls and preparing/submitting notification to the NYSDEC to demonstrate that the institutional controls are being maintained and remain effective.

Table 5-2
Cost Estimate for Alternative S3 - Capping of Soil Containing COCs > Ecological SCOs
with Removal of Soil Beyond WSI Property Limits

WSI - Waste-Stream, Inc. Site - Potsdam, New York

26. Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation) in accordance with OSWER Directive 9355.3-20 "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis" (USEPA, 1993). It is assumed that "year zero" is 2008.

Table 5-3
 Cost Estimate for Alternative S4 - Excavation of Soil (PCBs \geq 50 ppm) with Off-Site Management;
 Removal of Soil Beyond WSI Property Limits; On-Site Consolidation and Capping

WSI - Waste-Stream, Inc. Site - Potsdam, New York

Item #	Description	Estimated Quantity	Unit	Unit Price (materials and labor)	Estimated Amount
CAPITAL COSTS					
1	Mobilization/Demobilization	1	LS	\$100,000	\$100,000
2	Utility Location and Markout	1	LS	\$2,000	\$2,000
3	Construct and Remove Equipment Decontamination Pad	1	LS	\$7,500	\$7,500
4	Permanent Site Fencing	4,000	LF	\$35	\$140,000
5	Erosion Control	2,000	LF	\$1	\$2,000
6	Construction and Maintenance of Soil Staging Area	1	LS	\$100,000	\$100,000
7	Soil Excavation and Handling of Excavated Materials	10,300	CY	\$30	\$309,000
8	Soil Excavation Dewatering	2	month	\$7,000	\$14,000
9	Verification Sampling	240	each	\$400	\$96,000
10	Select Fill Importation, Placement, Grading and Compaction (Backfill)	5,000	CY	\$25	\$125,000
11	Site Regrading and Compaction (Backfill)	4,400	CY	\$10	\$44,000
12	Demarcation Layer	71,900	SY	\$1	\$71,900
13	Clay Importation, Placement, Grading and Compaction (Cap)	21,800	CY	\$20	\$436,000
14	Topsoil Importation, Placement, and Grading (Cap)	10,900	CY	\$25	\$272,500
15	Seed, Mulch, and Fertilizer	15.2	acre	\$5,000	\$76,000
16	Stormwater Management	1	LS	\$300,000	\$300,000
17	Solid Waste Characterization	31	each	\$750	\$23,250
18	Liquid Waste Characterization	1	each	\$750	\$750
19	Soil Waste Transportation and Off-Site Management - Solid Waste Landfill	750	ton	\$50	\$37,500
20	Soil Waste Transportation and Off-Site Management - RCRA Landfill	8,100	ton	\$145	\$1,174,500
21	Management of Wastewater	30,000	gal	\$0.20	\$6,000
22	Legal Expenses for Institutional Controls	1	LS	\$50,000	\$50,000
					Total Capital Cost \$3,387,900
23				Administration and Engineering (10%)	\$216,990
				Construction Management (5%)	\$108,495
				Contingency (20%)	\$677,580
				Subtotal Cost	\$4,390,965
OPERATION AND MAINTENANCE COSTS (30 YEAR)					
24	Annual Monitoring/Maintenance	1	LS	\$10,000	\$10,000
25	Inspection of Institutional Controls and Notifications to NYSDEC	1	LS	\$5,000	\$5,000
					Total O&M Cost \$15,000
					Contingency (20%) \$3,000
					Subtotal Cost \$18,000
26				30-Year Total Present Worth Cost of O&M	\$223,380
				Total Estimated Cost	\$4,614,345
				Rounded to	\$4,600,000

General Notes:

1. Cost estimate is based on ARCADIS' past experience and vendor estimates using 2009 dollars.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual projected cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. ARCADIS is not licensed to provide financial or legal consulting services; as such; this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.

Table 5-3
Cost Estimate for Alternative S4 - Excavation of Soil (PCBs \geq 50 ppm) with Off-Site Management;
Removal of Soil Beyond WSI Property Limits; On-Site Consolidation and Capping

WSI - Waste-Stream, Inc. Site - Potsdam, New York

Assumptions:

1. Mobilization/demobilization cost estimate includes mobilization and demobilization of all equipment, materials, and labor necessary to perform soil excavation and construct a multi-media cap.
2. Utility location and markout cost estimate includes labor, equipment, and materials necessary to locate, identify, and markout underground utilities at the site. Cost assumes that utility location and markout would be conducted by a private utility locating company over a period of two days at a daily rate of \$1,000 per day.
3. Construct and remove equipment decontamination pad cost estimate includes labor, equipment, and materials necessary to construct and remove a 60-foot by 30-foot decontamination pad and appurtenances. The decontamination pad would consist of 40-mil high-density polyethylene (HDPE) with a six-inch gravel drainage layer placed over the HDPE liner, surrounded by a one-foot high berm and sloped to a collection sump for the collection of decontamination water.
4. Permanent site fencing cost estimate includes all labor, equipment, and materials necessary to purchase and install a six-foot woven steel chain link fence equipped with top rail.
5. Erosion control cost estimate includes all labor, equipment, and materials necessary to purchase and install a three-foot silt fence equipped with stakes 10-foot on-center.
6. Construction and maintenance of soil staging area cost estimate includes labor, equipment, and materials to construct two approximately 100-foot by 100-foot material staging areas consisting of a 12-inch gravel fill layer bermed and sloped to a sump and covered with a 40-mil HDPE liner for the segregation of excavated material. Maintenance costs include inspecting and repairing staging area as necessary and covering staged soil with polyethylene sheeting. Cost assumes construction cost of approximately \$4 per square foot of pad.
7. Soil excavation and handling of excavated materials cost estimate includes all labor, equipment, and materials necessary to excavate material, transfer excavated material to on-site staging area, and load staged material for off-site transportation or on-site consolidation. Estimated excavation limits and volumes (in-place) based on thiessen polygons created from previously collected site samples. Cost estimate includes air monitoring during excavation activities.
8. Soil excavation dewatering cost estimate includes rental of one frac tank, pumps, and piping. Cost estimate assumes water removed from excavations and material and decontamination areas will be temporarily stored on-site in a frac tank prior to transportation for off-site management.
9. Verification sampling cost estimate includes the laboratory analysis of soil samples collected from soil excavation areas for PCBs, SVOCs, and RCRA metals to verify impacted soil has been removed to proposed soil cleanup objectives. Cost estimate assumes a soil sample is collected every 2,500 square-feet of excavation bottom and every 50 linear-feet of excavation sidewalls.
10. Select fill importation, placement, grading and compaction cost estimate includes all labor, equipment, and materials necessary to purchase, place, grade and compact general fill. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 90% maximum compaction. Cost estimate includes survey verification and compaction testing.
11. Site regrading and compaction cost estimate includes all labor, equipment, and materials necessary to regrade and compact material excavated beyond the WSI property boundary for use as backfill within the WSI property boundary. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 90% maximum compaction. Cost estimate includes survey verification and compaction testing.
12. Demarcation layer cost estimate includes all labor, equipment, and materials necessary to purchase and install light-weight non-woven geotextile material as base layer to provide visual demarcation between clean cover materials and potentially impacted underlying soils. Cost estimate includes an additional 10% of material for folding, wrinkles, and overlaps.
13. Clay importation, placement, grading and compaction cost estimate includes all labor, equipment, and materials necessary to purchase, place, grade and compact clay or other suitable material. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 95% maximum compaction. Cost estimate includes survey verification and compaction testing.
14. Top soil importation, placement, and grading cost estimate includes all labor, equipment, and materials necessary to purchase, place, and grade six inches of topsoil.

Table 5-3
Cost Estimate for Alternative S4 - Excavation of Soil (PCBs \geq 50 ppm) with Off-Site Management;
Removal of Soil Beyond WSI Property Limits; On-Site Consolidation and Capping

WSI - Waste-Stream, Inc. Site - Potsdam, New York

15. Seed, mulch, and fertilizer cost estimate includes all labor, equipment, and materials necessary to purchase and apply seed, fertilizer, and mulch to site soil. Quantity estimate based on capping area within WSI property boundary and backfilled excavation areas beyond the WSI property boundary.

Table 5-3
Cost Estimate for Alternative S4 - Excavation of Soil (PCBs ≥ 50 ppm) with Off-Site Management; Removal of Soil Beyond WSI Property Limits; On-Site Consolidation and Capping

WSI - Waste-Stream, Inc. Site - Potsdam, New York

16. Stormwater management cost estimate includes all labor, equipment, and materials necessary to construct on-site stormwater collection trenches, drainage swales, and stormwater detention basins from management of stormwater runoff during and following remedial activities. Final stormwater management system to be developed during the remedial design phase.
17. Solid waste characterization cost estimate includes the analysis of soil samples (including, but not limited to, PCBs, VOCs, SVOCs, and RCRA Metals). Costs assumes that waste characterization samples would be collected at a frequency of one sample per every 500 tons of excavated material. The estimated weight of material was based on an assumed 1.5 tons per cubic-yard.
18. Liquid waste characterization cost estimate includes the analysis of wastewater sample for PCBs, VOCs, SVOCs, metals, and pesticides. Liquid waste characterization to be conducted in accordance with the requirements provided by off-site management facility.
19. Soil waste transportation and off-site management - solid waste landfill cost estimate includes all labor, equipment, and materials necessary to transport soil containing PCBs at concentrations less than 50 ppm for off-site management at an appropriate landfill. Cost estimate assumes a material density of 1.5 tons per cubic-yard. Cost estimate assumes soil would be management at Seneca Meadows Landfill located in Waterloo, New York. Cost estimate includes transportation fuel charge and all applicable taxes. Cost estimate is based on information provided to ARCADIS by Seneca Meadows Landfill on December 16, 2008.
20. Soil waste transportation and off-site management - RCRA landfill cost estimate includes all labor, equipment, and materials necessary to transport soil containing PCBs at concentrations greater than 50 ppm off-site for management at an appropriately permitted RCRA landfill. Cost estimate assumes a material density of 1.5 tons per cubic-yard. Cost estimate assumes that soil would be managed at Model City Landfill located in Niagara Falls, New York. Cost estimate includes transportation fuel charge, local, and state taxes. Cost estimate is based on information provided to ARCADIS by Waste Management on December 15, 2008.
21. Management of wastewater cost estimate include the transportation and off-site management of water generated during soil excavation activities. Volume estimate includes removal of one pore volume of saturated soil prior to excavation and removal of water from open excavation up to 2 times prior to backfilling.
22. Legal expenses for institutional controls cost estimate includes all labor and materials necessary to institute environmental easements and deed restrictions to prevent current or future site workers from performing activities that would jeopardize the integrity of the multi-media cap.
23. Administration and engineering and construction management costs are based on an assumed 10% and 5% (respectively) of the total capital costs, not including costs for off-site management of material.
24. Annual monitoring/maintenance cost estimate includes all labor, equipment, and materials necessary to maintain the soil cap to prevent soil erosion. Cost estimate includes annual inspection of capped area to verify integrity of the soil cap. Cost estimate assumes annual cap maintenance including placement of up to six inches of topsoil and vegetation for up to 10,000 square-feet of soil cap. Cost estimate also includes annual inspection and repair/replacement of up to 100 linear-feet of new site perimeter fencing. Cost estimate also includes annual inspection and maintenance of stormwater management structures (e.g., ponds, ditches, etc.).
25. Inspection of institutional controls and notifications to NYSDEC cost estimate includes costs associated with implementing institutional controls to prevent current or future site workers from performing activities that would jeopardize the integrity of the soil cap. Such institutional controls may include governmental controls, proprietary controls, enforcement tools, and/or informational devices. Annual costs associated with institutional controls include verifying the status of institutional controls and preparing/submitting notification to the NYSDEC to demonstrate that the institutional controls are being maintained and remain effective.
26. Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation) in accordance with OSWER Directive 9355.3-20 "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis" (USEPA, 1993). It is assumed that "year zero" is 2008.

Table 5-4
 Cost Estimate for Alternative S5 - Excavation of Soil (PCBs \geq 25 ppm) with Off-Site Management;
 Removal of Soil Beyond WSI Property Limits; On-Site Consolidation and Capping

WSI - Waste-Stream, Inc. Site - Potsdam, New York

Item #	Description	Estimated Quantity	Unit	Unit Price (materials and labor)	Estimated Amount
CAPITAL COSTS					
1	Mobilization/Demobilization	1	LS	\$100,000	\$100,000
2	Utility Location and Markout	1	LS	\$2,000	\$2,000
3	Construct and Remove Equipment Decontamination Pad	1	LS	\$7,500	\$7,500
4	Permanent Site Fencing	4,000	LF	\$35	\$140,000
5	Erosion Control	2,000	LF	\$1	\$2,000
6	Construction and Maintenance of Soil Staging Area	1	LS	\$100,000	\$100,000
7	Soil Excavation and Handling of Excavated Materials	11,700	CY	\$30	\$351,000
8	Soil Excavation Dewatering	2	month	\$7,000	\$14,000
9	Verification Sampling	280	each	\$400	\$112,000
10	Select Fill Importation, Placement, Grading and Compaction (Backfill)	5,000	CY	\$25	\$125,000
11	Site Regrading and Compaction (Backfill)	4,000	CY	\$10	\$40,000
12	Demarcation Layer	71,900	SY	\$1	\$71,900
13	Clay Importation, Placement, Grading and Compaction (Cap)	21,800	CY	\$20	\$436,000
14	Topsoil Importation, Placement, and Grading (Cap)	10,900	CY	\$25	\$272,500
15	Seed, Mulch, and Fertilizer	15.2	acre	\$5,000	\$76,000
16	Stormwater Management	1	LS	\$300,000	\$300,000
17	Solid Waste Characterization	36	each	\$750	\$27,000
18	Liquid Waste Characterization	1	each	\$750	\$750
19	Soil Waste Transportation and Off-Site Management - Solid Waste Landfill	3,500	ton	\$50	\$175,000
20	Soil Waste Transportation and Off-Site Management - RCRA Landfill	8,100	ton	\$145	\$1,174,500
21	Management of Wastewater	30,000	gal	\$0.20	\$6,000
22	Legal Expenses for Institutional Controls	1	LS	\$50,000	\$50,000
				Total Capital Cost	\$3,583,150
23				Administration and Engineering (10%)	\$222,765
				Construction Management (5%)	\$111,383
				Contingency (20%)	\$716,630
				Subtotal Cost	\$4,633,928
OPERATION AND MAINTENANCE COSTS (30 YEAR)					
24	Annual Monitoring/Maintenance	1	LS	\$10,000	\$10,000
25	Inspection of Institutional Controls and Notifications to NYSDEC	1	LS	\$5,000	\$5,000
				Total O&M Cost	\$15,000
				Contingency (20%)	\$3,000
				Subtotal Cost	\$18,000
26				30-Year Total Present Worth Cost of O&M	\$223,380
				Total Estimated Cost	\$4,857,308
				Rounded to	\$4,900,000

Table 5-4
Cost Estimate for Alternative S5 - Excavation of Soil (PCBs ≥ 25 ppm) with Off-Site Management;
Removal of Soil Beyond WSI Property Limits; On-Site Consolidation and Capping

WSI - Waste-Stream, Inc. Site - Potsdam, New York

General Notes:

1. Cost estimate is based on ARCADIS' past experience and vendor estimates using 2009 dollars.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual projected cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. ARCADIS is not licensed to provide financial or legal consulting services; as such; this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.

Assumptions:

1. Mobilization/demobilization cost estimate includes mobilization and demobilization of all equipment, materials, and labor necessary to perform soil excavation and construct a soil cap.
2. Utility location and markout cost estimate includes labor, equipment, and materials necessary to locate, identify, and markout underground utilities at the site. Cost assumes that utility location and markout would be conducted by a private utility locating company over a period of two days at a daily rate of \$1,000 per day.
3. Construct and remove equipment decontamination pad cost estimate includes labor, equipment, and materials necessary to construct and remove a 60-foot by 30-foot decontamination pad and appurtenances. The decontamination pad would consist of 40-mil high-density polyethylene (HDPE) with a six-inch gravel drainage layer placed over the HDPE liner, surrounded by a one-foot high berm and sloped to a collection sump for the collection of decontamination water.
4. Permanent site fencing cost estimate includes all labor, equipment, and materials necessary to purchase and install a six-foot woven steel chain link fence equipped with top rail.
5. Erosion control cost estimate includes all labor, equipment, and materials necessary to purchase and install a three-foot silt fence equipped with stakes 10-foot on-center.
6. Construction and maintenance of soil staging area cost estimate includes labor, equipment, and materials to construct two approximately 100-foot by 100-foot material staging areas consisting of a 12-inch gravel fill layer bermed and sloped to a sump and covered with a 40-mil HDPE liner for the segregation of excavated material. Maintenance costs include inspecting and repairing staging area as necessary and covering staged soil with polyethylene sheeting. Cost assumes construction cost of approximately \$4 per square foot of pad.
7. Soil excavation and handling of excavated materials cost estimate includes all labor, equipment, and materials necessary to excavate material, transfer excavated material to on-site staging area, and load staged material for off-site transportation or on-site consolidation. Estimated excavation limits and volumes (in-place) based on thiessen polygons created from previously collected site samples. Cost estimate includes air monitoring during excavation activities.
8. Soil excavation dewatering cost estimate includes rental of one frac tank, pumps, and piping. Cost estimate assumes water removed from excavations and material and decontamination areas will be temporarily stored on-site in a frac tank prior to transportation for off-site management.
9. Verification sampling cost estimate includes the laboratory analysis of soil samples collected from soil excavation areas for PCBs, SVOCs, and RCRA metals to verify impacted soil has been removed to proposed soil cleanup objectives. Cost estimate assumes a soil sample is collected every 2,500 square-feet of excavation bottom and every 50 linear-feet of excavation sidewalls.
10. Select fill importation, placement, grading and compaction cost estimate includes all labor, equipment, and materials necessary to purchase, place, grade and compact general fill. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 90% maximum compaction. Cost estimate includes survey verification and compaction testing.
11. Site regrading and compaction cost estimate includes all labor, equipment, and materials necessary to regrade and compact 4,000 CY of material excavated beyond the WSI property boundary (containing PCBs at concentrations less than 25 ppm) for use as backfill within the WSI property boundary. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 90% maximum compaction. Cost estimate includes survey verification and compaction testing.

Table 5-4
Cost Estimate for Alternative S5 - Excavation of Soil (PCBs ≥ 25 ppm) with Off-Site Management; Removal of Soil Beyond WSI Property Limits; On-Site Consolidation and Capping

WSI - Waste-Stream, Inc. Site - Potsdam, New York

12. Demarcation layer cost estimate includes all labor, equipment, and materials necessary to purchase and install light-weight non-woven geotextile material as base layer to provide visual demarcation between clean cover materials and potentially impacted underlying soils. Cost estimate includes an additional 10% of material for folding, wrinkles, and overlaps.
13. Clay importation, placement, grading and compaction cost estimate includes all labor, equipment, and materials necessary to purchase, place, grade and compact clay or other suitable material. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 95% maximum compaction. Cost estimate includes survey verification and compaction testing.
14. Top soil importation, placement, and grading cost estimate includes all labor, equipment, and materials necessary to purchase, place, and grade six inches of topsoil.
15. Seed, mulch, and fertilizer cost estimate includes all labor, equipment, and materials necessary to purchase and apply seed, fertilizer, and mulch to site soil. Quantity estimate based on capping area within WSI property boundary and backfilled excavation areas beyond the WSI property boundary.
16. Stormwater management cost estimate includes all labor, equipment, and materials necessary to construct on-site stormwater collection trenches, drainage swales, and stormwater detention basins from management of stormwater runoff during and following remedial activities. Final stormwater management system to be developed during the remedial design phase.
17. Solid waste characterization cost estimate includes the analysis of soil samples (including, but not limited to, PCBs, VOCs, SVOCs, and RCRA Metals). Costs assumes that waste characterization samples would be collected at a frequency of one sample per every 500 tons of excavated material. The estimated weight of material was based on an assumed 1.5 tons per cubic-yard.
18. Liquid waste characterization cost estimate includes the analysis of wastewater sample for PCBs, VOCs, SVOCs, metals, and pesticides. Liquid waste characterization to be conducted in accordance with the requirements provided by off-site management facility.
19. Soil waste transportation and off-site management - solid waste landfill cost estimate includes all labor, equipment, and materials necessary to transport soil containing PCBs at concentrations less than 50 ppm for off-site management at an appropriate landfill. Cost estimate assumes a material density of 1.5 tons per cubic-yard. Cost estimate assumes soil would be management at Seneca Meadows Landfill located in Waterloo, New York. Cost estimate includes transportation fuel charge and all applicable taxes. Cost estimate is based on information provided to ARCADIS by Seneca Meadows Landfill on December 16, 2008.
20. Soil waste transportation and off-site management - RCRA landfill cost estimate includes all labor, equipment, and materials necessary to transport soil containing PCBs at concentrations greater than 50 ppm for off-site management at an appropriately permitted RCRA landfill. Cost estimate assumes a material density of 1.5 tons per cubic-yard. Cost estimate assumes that soil would be managed at Model City Landfill located in Niagara Falls, New York. Cost estimate includes transportation fuel charge, local, and state taxes. Cost estimate is based on information provided to ARCADIS by Waste Management on December 15, 2008.
21. Management of wastewater cost estimate include the transportation and off-site management of water generated during soil excavation activities. Volume estimate includes removal of one pore volume of saturated soil prior to excavation and removal of water from open excavation up to 2 times prior to backfilling.
22. Legal expenses for institutional controls cost estimate includes all labor and materials necessary to institute environmental easements and deed restrictions to prevent current or future site workers from performing activities that would jeopardize the integrity of the multi-media cap.
23. Administration and engineering and construction management costs are based on an assumed 10% and 5% (respectively) of the total capital costs, not including costs for off-site management of material.
24. Annual monitoring/maintenance cost estimate includes all labor, equipment, and materials necessary to maintain the soil cap to prevent soil erosion. Cost estimate includes annual inspection of capped area to verify integrity of the soil cap. Cost estimate assumes annual cap maintenance including placement of up to six inches of topsoil and vegetation for up to 10,000 square-feet of soil cap. Cost estimate also includes annual inspection and repair/replacement of up to 100 linear-feet of new site perimeter fencing. Cost estimate also includes annual inspection and maintenance of stormwater management structures (e.g., ponds, ditches, etc.).

Table 5-4
**Cost Estimate for Alternative S5 - Excavation of Soil (PCBs \geq 25 ppm) with Off-Site Management;
Removal of Soil Beyond WSI Property Limits; On-Site Consolidation and Capping**

WSI - Waste-Stream, Inc. Site - Potsdam, New York

25. Inspection of institutional controls and notifications to NYSDEC cost estimate includes costs associated with implementing institutional controls to prevent current or future site workers from performing activities that would jeopardize the integrity of the soil cap. Such institutional controls may include governmental controls, proprietary controls, enforcement tools, and/or informational devices. Annual costs associated with institutional controls include verifying the status of institutional controls and preparing/submitting notification to the NYSDEC to demonstrate that the institutional controls are being maintained and remain effective.
26. Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation) in accordance with OSWER Directive 9355.3-20 "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis" (USEPA, 1993). It is assumed that "year zero" is 2008.

Table 5-5
 Cost Estimate for Alternative S6 - Excavation of Soil (PCBs \geq 10 ppm) with Off-Site Management;
 Removal of Soil Beyond WSI Property Limits; On-Site Consolidation and Capping

WSI - Waste-Stream, Inc. Site - Potsdam, New York

Item #	Description	Estimated Quantity	Unit	Unit Price (materials and labor)	Estimated Amount
CAPITAL COSTS					
1	Mobilization/Demobilization	1	LS	\$100,000	\$100,000
2	Utility Location and Markout	1	LS	\$2,000	\$2,000
3	Construct and Remove Equipment Decontamination Pad	1	LS	\$7,500	\$7,500
4	Permanent Site Fencing	4,000	LF	\$35	\$140,000
5	Erosion Control	2,000	LF	\$1	\$2,000
6	Construction and Maintenance of Soil Staging Areas	1	LS	\$150,000	\$150,000
7	Soil Excavation and Handling of Excavated Materials	19,200	CY	\$30	\$576,000
8	Soil Excavation Dewatering	3	month	\$7,000	\$21,000
9	Verification Sampling	470	each	\$400	\$188,000
10	Select Fill Importation, Placement, Grading and Compaction (Backfill Beyond WSI Property Boundary)	5,000	CY	\$25	\$125,000
11	Site Regrading and Compaction (Backfill)	3,800	CY	\$10	\$38,000
12	Select Fill Importation, Placement, Grading and Compaction (Backfill within WSI Property Boundary)	5,000	CY	\$25	\$125,000
13	Demarcation Layer	71,900	SY	\$1	\$71,900
14	Clay Importation, Placement, Grading and Compaction (Cap)	21,800	CY	\$20	\$436,000
15	Topsoil Importation, Placement, and Grading (Cap)	10,900	CY	\$25	\$272,500
16	Seed, Mulch, and Fertilizer	15.2	acre	\$5,000	\$76,000
17	Stormwater Management	1	LS	\$300,000	\$300,000
18	Solid Waste Characterization	58	each	\$750	\$43,500
19	Liquid Waste Characterization	1	each	\$750	\$750
20	Soil Waste Transportation and Off-Site Management - Solid Waste Landfill	15,000	ton	\$50	\$750,000
21	Soil Waste Transportation and Off-Site Management - RCRA Landfill	8,100	ton	\$145	\$1,174,500
22	Management of Wastewater	40,000	gal	\$0.20	\$8,000
23	Legal Expenses for Institutional Controls	1	LS	\$50,000	\$50,000
				Total Capital Cost	\$4,657,650
24				Administration and Engineering (10%)	\$267,440
				Construction Management (5%)	\$133,720
				Contingency (20%)	\$931,530
				Subtotal Cost	\$5,990,340
OPERATION AND MAINTENANCE COSTS (30 YEAR)					
25	Annual Monitoring/Maintenance	1	LS	\$10,000	\$10,000
26	Inspection of Institutional Controls and Notifications to NYSDEC	1	LS	\$5,000	\$5,000
				Total O&M Cost	\$15,000
				Contingency (20%)	\$3,000
				Subtotal Cost	\$18,000
27				30-Year Total Present Worth Cost of O&M	\$223,380
				Total Estimated Cost	\$6,213,720
				Rounded to	\$6,200,000

Table 5-5
Cost Estimate for Alternative S6 - Excavation of Soil (PCBs \geq 10 ppm) with Off-Site Management;
Removal of Soil Beyond WSI Property Limits; On-Site Consolidation and Capping

WSI - Waste-Stream, Inc. Site - Potsdam, New York

General Notes:

1. Cost estimate is based on ARCADIS' past experience and vendor estimates using 2009 dollars.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual projected cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. ARCADIS is not licensed to provide financial or legal consulting services; as such; this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.

Assumptions:

1. Mobilization/demobilization cost estimate includes mobilization and demobilization of all equipment, materials, and labor necessary to perform soil excavation and construct a soil cap.
2. Utility location and markout cost estimate includes labor, equipment, and materials necessary to locate, identify, and markout underground utilities at the site. Cost assumes that utility location and markout would be conducted by a private utility locating company over a period of two days at a daily rate of \$1,000 per day.
3. Construct and remove equipment decontamination pad cost estimate includes labor, equipment, and materials necessary to construct and remove a 60-foot by 30-foot decontamination pad and appurtenances. The decontamination pad would consist of 40-mil high-density polyethylene (HDPE) with a six-inch gravel drainage layer placed over the HDPE liner, surrounded by a one-foot high berm and sloped to a collection sump for the collection of decontamination water.
4. Permanent site fencing cost estimate includes all labor, equipment, and materials necessary to purchase and install a six-foot woven steel chain link fence equipped with top rail.
5. Erosion control cost estimate includes all labor, equipment, and materials necessary to purchase and install a three-foot silt fence equipped with stakes 10-foot on-center.
6. Construction and maintenance of soil staging area cost estimate includes labor, equipment, and materials to construct an approximate 100-foot by 200-foot and an approximate 100-foot by 100-foot material staging areas consisting of a 12-inch gravel fill layer bermed and sloped to a sump and covered with a 40-mil HDPE liner for the segregation of excavated material. Maintenance costs include inspecting and repairing staging area as necessary and covering staged soil with polyethylene sheeting. Cost assumes construction cost of approximately \$4 per square foot of pad.
7. Soil excavation and handling of excavated materials cost estimate includes all labor, equipment, and materials necessary to excavate material, transfer excavated material to on-site staging area, and load staged material for off-site transportation or on-site consolidation. Estimated excavation limits and volumes (in-place) based on thiessen polygons created from previously collected site samples. Cost estimate includes air monitoring during excavation activities.
8. Soil excavation dewatering cost estimate includes rental of one frac tank, pumps, and piping. Cost estimate assumes water removed from excavations and material and decontamination areas will be temporarily stored on-site in a frac tank prior to transportation for off-site management.
9. Verification sampling cost estimate includes the laboratory analysis of soil samples collected from soil excavation areas for PCBs, SVOCs, and RCRA metals to verify impacted soil has been removed to proposed soil cleanup objectives. Cost estimate assumes a soil sample is collected every 2,500 square-feet of excavation bottom and every 50 linear-feet of excavation sidewalls.
10. Select fill importation, placement, grading and compaction cost estimate includes all labor, equipment, and materials necessary to purchase, place, grade and compact general fill. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 90% maximum compaction. Cost estimate includes survey verification and compaction testing.
11. Site regrading and compaction cost estimate includes all labor, equipment, and materials necessary to regrade and compact 3,800 CY of material excavated beyond the WSI property boundary (containing PCBs at concentrations less than 10 ppm) for use as backfill within the WSI property boundary.

Table 5-5
Cost Estimate for Alternative S6 - Excavation of Soil (PCBs \geq 10 ppm) with Off-Site Management;
Removal of Soil Beyond WSI Property Limits; On-Site Consolidation and Capping

WSI - Waste-Stream, Inc. Site - Potsdam, New York

12. Select fill importation, placement, grading and compaction cost estimate includes all labor, equipment, and materials necessary to purchase, place, grade and compact general fill. Note that 14,200 CY of excavated volume requires backfilling within the WSI property boundary. As indicated in Note #11, 3,800 CY of soil (from beyond the WSI property boundary) would be consolidated on-site, thereby leaving 10,400 CY within the WSI property boundary that requires backfilling. If Alternative SED3 is selected as the preferred sediment alternative, 2,100 CY of excavated sediment (containing PCBs at concentrations less than 10 ppm) would be available for use as backfill within the WSI property, thereby requiring an additional 8,300 CY of backfilling. If Alternative SED4 is selected as the preferred sediment alternative, 8,700 CY of excavated sediment (containing PCBs at concentrations less than 10 ppm) would be available for use as backfill within the WSI property, therefore requiring an additional 1,700 CY of backfilling. Therefore, this cost estimate includes importation of an additional 5,000 CY (average of 8,300 and 1,700 CY) of general fill to restore the site to pre-existing lines and grades (prior to capping). Cost estimate assumes material to be placed in 12-inch lifts and compaction to 90% maximum compaction. Cost estimate includes survey verification and compaction testing.
13. Demarcation layer cost estimate includes all labor, equipment, and materials necessary to purchase and install light-weight non-woven geotextile material as base layer to provide visual demarcation between clean cover materials and potentially impacted underlying soils. Cost estimate includes an additional 10% of material for folding, wrinkles, and overlaps.
14. Clay importation, placement, grading and compaction cost estimate includes all labor, equipment, and materials necessary to purchase, place, grade and compact clay or other suitable material. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 95% maximum compaction. Cost estimate includes survey verification and compaction testing.
15. Top soil importation, placement, and grading cost estimate includes all labor, equipment, and materials necessary to purchase, place, and grade six inches of topsoil.
16. Seed, mulch, and fertilizer cost estimate includes all labor, equipment, and materials necessary to purchase and apply seed, fertilizer, and mulch to site soil. Quantity estimate based on capping area within WSI property boundary and backfilled excavation areas beyond the WSI property boundary.
17. Stormwater management cost estimate includes all labor, equipment, and materials necessary to construct on-site stormwater collection trenches, drainage swales, and stormwater detention basins from management of stormwater runoff during and following remedial activities. Final stormwater management system to be developed during the remedial design phase.
18. Solid waste characterization cost estimate includes the analysis of soil samples (including, but not limited to, PCBs, VOCs, SVOCs, and RCRA Metals). Costs assumes that waste characterization samples would be collected at a frequency of one sample per every 500 tons of excavated material. The estimated weight of material was based on an assumed 1.5 tons per cubic-yard.
19. Liquid waste characterization cost estimate includes the analysis of wastewater sample for PCBs, VOCs, SVOCs, metals, and pesticides. Liquid waste characterization to be conducted in accordance with the requirements provided by off-site management facility.
20. Soil waste transportation and off-site management - solid waste landfill cost estimate includes all labor, equipment, and materials necessary to transport soil containing PCBs at concentrations less than 50 ppm for off-site management at an appropriate landfill. Cost estimate assumes a material density of 1.5 tons per cubic-yard. Cost estimate assumes soil would be managed at Seneca Meadows Landfill located in Waterloo, New York. Cost estimate includes transportation fuel charge and all applicable taxes. Cost estimate is based on information provided to ARCADIS by Seneca Meadows Landfill on December 16, 2008.
21. Soil waste transportation and off-site management - RCRA landfill cost estimate includes all labor, equipment, and materials necessary to transport soil containing PCBs at concentrations greater than 50 ppm for off-site management at an appropriately permitted RCRA landfill. Cost estimate assumes a material density of 1.5 tons per cubic-yard. Cost estimate assumes that soil would be managed at Model City Landfill located in Niagara Falls, New York. Cost estimate includes transportation fuel charge, local, and state taxes. Cost estimate is based on information provided to ARCADIS by Waste Management on December 15, 2008.

Table 5-5
Cost Estimate for Alternative S6 - Excavation of Soil (PCBs \geq 10 ppm) with Off-Site Management;
Removal of Soil Beyond WSI Property Limits; On-Site Consolidation and Capping

WSI - Waste-Stream, Inc. Site - Potsdam, New York

22. Management of wastewater cost estimate include the transportation and off-site management of water generated during soil excavation activities. Volume estimate includes removal of one pore volume of saturated soil prior to excavation and removal of water from open excavation up to 2 times prior to backfilling.
23. Legal expenses for institutional controls cost estimate includes all labor and materials necessary to institute environmental easements and deed restrictions to prevent current or future site workers from performing activities that would jeopardize the integrity of the multi-media cap.
24. Administration and engineering and construction management costs are based on an assumed 10% and 5% (respectively) of the total capital costs, not including costs for off-site management of material.
25. Annual monitoring/maintenance cost estimate includes all labor, equipment, and materials necessary to maintain the soil cap to prevent soil erosion. Cost estimate includes annual inspection of capped area to verify integrity of the soil cap. Cost estimate assumes annual cap maintenance including placement of up to six inches of topsoil and vegetation for up to 10,000 square-feet of soil cap. Cost estimate also includes annual inspection and repair/replacement of up to 100 linear-feet of new site perimeter fencing. Cost estimate also includes annual inspection and maintenance of stormwater management structures (e.g., ponds, ditches, etc.).
26. Inspection of institutional controls and notifications to NYSDEC cost estimate includes costs associated with implementing institutional controls to prevent current or future site workers from performing activities that would jeopardize the integrity of the soil cap. Such institutional controls may include governmental controls, proprietary controls, enforcement tools, and/or informational devices. Annual costs associated with institutional controls include verifying the status of institutional controls and preparing/submitting notification to the NYSDEC to demonstrate that the institutional controls are being maintained and remain effective.
27. Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation) in accordance with OSWER Directive 9355.3-20 "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis" (USEPA, 1993). It is assumed that "year zero" is 2008.

Table 5-6
Cost Estimate for Alternative S7 - Excavation of Soil Containing COCs > Unrestricted Use SCOs
with Off-Site Management

WSI - Waste-Stream, Inc. Site - Potsdam, New York

Item #	Description	Estimated Quantity	Unit	Unit Price (materials and labor)	Estimated Amount
CAPITAL COSTS					
1	Mobilization/Demobilization	1	LS	\$100,000	\$100,000
2	Utility Location and Markout	1	LS	\$2,000	\$2,000
3	Construct and Remove Equipment Decontamination Pad	1	LS	\$7,500	\$7,500
4	Erosion Control	4,000	LF	\$1	\$4,000
5	Construction and Maintenance of Soil Staging Area	1	LS	\$150,000	\$150,000
6	Soil Excavation and Handling of Excavated Materials	90,800	CY	\$30	\$2,724,000
7	Soil Excavation Dewatering	10	month	\$50,000	\$500,000
8	Verification Sampling	1,260	each	\$400	\$504,000
9	Select Fill Importation, Placement, Grading and Compaction (Backfill)	90,800	CY	\$25	\$2,270,000
10	Seed, Mulch, and Fertilizer	15.5	acre	\$5,000	\$77,500
11	Stormwater Management	1	LS	\$300,000	\$300,000
12	Solid Waste Characterization	272	each	\$750	\$204,300
13	Liquid Waste Characterization	3	each	\$750	\$2,250
14	Soil Waste Transportation and Off-Site Management - Solid Waste Landfill	128,100	ton	\$50	\$6,405,000
15	Soil Waste Transportation and Off-Site Management - RCRA Landfill	8,100	ton	\$145	\$1,174,500
16	Groundwater Discharge to POTW	275,000	gal	\$0.02	\$5,500
					Total Capital Cost
					\$14,430,550
17					Administration and Engineering (10%)
					\$684,555
					Construction Management (5%)
					\$342,278
					Contingency (20%)
					\$2,886,110
					Subtotal Cost
					\$18,343,493
					Total Estimated Cost
					\$18,343,493
					Rounded to
					\$18,400,000

General Notes:

1. Cost estimate is based on ARCADIS' past experience and vendor estimates using 2009 dollars.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual projected cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. ARCADIS is not licensed to provide financial or legal consulting services; as such; this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.

Assumptions:

1. Mobilization/demobilization cost estimate includes mobilization and demobilization of all equipment, materials, and labor necessary to facilitate soil excavation.
2. Utility location and markout cost estimate includes labor, equipment, and materials necessary to locate, identify, and markout underground utilities at the site. Cost assumes that utility location and markout would be conducted by a private utility locating company over a period of two days at a daily rate of \$1,000 per day.
3. Construct and remove equipment decontamination pad cost estimate includes labor, equipment, and materials necessary to construct and remove a 60-foot by 30-foot decontamination pad and appurtenances. The decontamination pad would consist of 40-mil high-density polyethylene (HDPE) with a six-inch gravel drainage layer placed over the HDPE liner, surrounded by a one-foot high berm and sloped to a collection sump for the collection of decontamination water.
4. Erosion control cost estimate includes all labor, equipment, and materials necessary to purchase and install a three-foot silt fence equipped with stakes 10-foot on-center.

Table 5-6
Cost Estimate for Alternative S7 - Excavation of Soil Containing COCs > Unrestricted Use SCOs
with Off-Site Management

WSI - Waste-Stream, Inc. Site - Potsdam, New York

5. Construction and maintenance of soil staging area cost estimate includes labor, equipment, and materials to construct an approximate 100-foot by 200-foot and an approximate 100-foot by 100-foot material staging areas consisting of a 12-inch gravel fill layer bermed and sloped to a sump and covered with a 40-mil HDPE liner for the segregation of excavated material. Maintenance costs include inspecting and repairing staging area as necessary and covering staged soil with polyethylene sheeting. Cost assumes construction cost of approximately \$4 per square foot of pad.
6. Soil excavation and handling of excavated materials cost estimate includes all labor, equipment, and materials necessary to excavate material, transfer excavated material to on-site staging area, and load staged material for off-site transportation or on-site consolidation. Estimated excavation limits and volumes (in-place) based on thiessen polygons created from previously collected site samples. Cost estimate includes air monitoring during excavation activities.
7. Soil excavation dewatering cost estimate includes rental of a portal water treatment system capable of operating at 30 gallons per minute. Cost estimate assumes water treatment system includes pumps, influent piping and hoses, frac tank, carbon filters, bag filters, discharge piping and hoses, and flow meter. Cost estimate assumes bag filters will require change out approximately once per day of operation. Cost estimate assumes treated water would be discharged to POTW via local sanitary sewer. Cost estimate based on information provided to ARCADIS by Baker Tanks on March 8, 2007. Cost estimate includes sampling of treated water.
8. Verification sampling cost estimate includes the laboratory analysis of soil samples collected from soil excavation areas for PCBs, SVOCs, and RCRA metals to verify impacted soil has been removed to proposed soil cleanup objectives. Cost estimate assumes a soil sample is collected every 2,500 square-feet of excavation bottom and every 50 linear-feet of excavation sidewalls.
9. Select fill importation, placement, grading and compaction cost estimate includes all labor, equipment, and materials necessary to purchase, place, grade and compact general fill. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 90% maximum compaction. Cost estimate includes survey verification and compaction testing.
10. Seed, mulch, and fertilizer cost estimate includes all labor, equipment, and materials necessary to purchase and apply seed, fertilizer, and mulch to site soil. Quantity estimate based on backfilled excavation areas within and beyond the WSI property boundary.
11. Stormwater management cost estimate includes all labor, equipment, and materials necessary to construct on-site stormwater collection trenches, drainage swales, and stormwater detention basins from management of stormwater runoff both during and following remedial activities. Final stormwater management system to be developed during the remedial design phase.
12. Solid waste characterization cost estimate includes the analysis of soil samples (including, but not limited to, PCBs, VOCs, SVOCs, and RCRA Metals). Costs assumes that waste characterization samples would be collected at a frequency of one sample per every 500 tons of excavated material. The estimated weight of material was based on an assumed 1.5 tons per cubic-yard.
13. Liquid waste characterization cost estimate includes the analysis of wastewater sample for PCBs, VOCs, SVOCs, metals, and pesticides. Liquid waste characterization to be conducted in accordance with the requirements provided by POTW.
14. Soil waste transportation and off-site management - solid waste landfill cost estimate includes all labor, equipment, and materials necessary to transport soil containing PCBs at concentrations less than 50 ppm for off-site management at an appropriate landfill. Cost estimate assumes a material density of 1.5 tons per cubic-yard. Cost estimate assumes soil would be managed at Seneca Meadows Landfill located in Waterloo, New York. Cost estimate includes transportation fuel charge and all applicable taxes. Cost estimate is based on information provided to ARCADIS by Seneca Meadows Landfill on December 16, 2008.
15. Soil waste transportation and off-site management - RCRA landfill cost estimate includes all labor, equipment, and materials necessary to transport soil containing PCBs at concentrations greater than 50 ppm for off-site management at an appropriately permitted RCRA landfill. Cost estimate assumes a material density of 1.5 tons per cubic-yard. Cost estimate assumes that soil would be managed at Model City Landfill located in Niagara Falls, New York. Cost estimate includes transportation fuel charge, local, and state taxes. Cost estimate is based on information provided to ARCADIS by Waste Management on December 15, 2008.

Table 5-6
Cost Estimate for Alternative S7 - Excavation of Soil Containing COCs > Unrestricted Use SCOs
with Off-Site Management

WSI - Waste-Stream, Inc. Site - Potsdam, New York

16. Groundwater discharge to POTW cost estimate includes fee for discharging treated water generated during soil excavation activities to a sanitary sewer for management at the local POTW. Volume estimate includes removal of one pore volume of saturated soil prior to excavation and removal of water from open excavation up to 2 times prior to backfilling.
17. Administration and engineering and construction management costs are based on an assumed 10% and 5% (respectively) of the total capital costs, not including costs for off-site management of material.

Table 5-7
 Cost Estimate for Alternative GW2 - Institutional Controls

WSI - Waste-Stream, Inc. Site - Potsdam, New York

Item #	Description	Estimated Quantity	Unit	Unit Price (materials and labor)	Estimated Amount
CAPITAL COSTS					
1	Legal Expenses for Institutional Controls	1	LS	\$50,000	\$50,000
				Total Capital Cost	\$50,000
				Contingency (20%)	\$10,000
				Subtotal Cost	\$60,000
OPERATION AND MAINTENANCE COSTS					
2	Inspection of Institutional Controls and Notifications to NYSDEC	1	LS	\$5,000	\$5,000
				Total O&M Cost	\$5,000
				Contingency (20%)	\$1,000
				Subtotal Cost	\$6,000
3				30-Year Total Present Worth Cost of O&M	\$74,460
				Total Estimated Cost	\$134,460
				Rounded to	\$135,000

General Notes:

1. Cost estimate is based on ARCADIS' past experience and vendor estimates using 2009 dollars.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual projected cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. ARCADIS is not licensed to provide financial or legal consulting services; as such; this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.

Assumptions:

1. Legal expenses for institutional controls cost estimate includes all labor and materials necessary to institute environmental easements and deed restrictions to prevent potential future use of site groundwater.
2. Inspection of institutional controls and notifications to NYSDEC cost estimate includes costs associated with implementing institutional controls to minimize the potential for human exposure to site groundwater. Such institutional controls may include governmental controls, proprietary controls, enforcement tools, and/or informational devices. Annual costs associated with institutional controls include verifying the status of institutional controls and preparing/submitting notification to the NYSDEC to demonstrate that the institutional controls are being maintained and remain effective.
3. Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation) in accordance with OSWER Directive 9355.3-20 "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis" (USEPA, 1993). It is assumed that "year zero" is 2008.

Table 5-8
 Cost Estimate for Alternative GW3 - Continued Monitoring

WSI - Waste-Stream, Inc. Site - Potsdam, New York

Item #	Description	Estimated Quantity	Unit	Unit Price (materials and labor)	Estimated Amount				
CAPITAL COSTS									
1	Legal Expenses for Institutional Controls	1	LS	\$50,000	\$50,000				
2	Abandon Existing Monitoring Wells	10	each	\$2,000	\$20,000				
3	Groundwater Monitoring Well Installation	10	each	\$5,000	\$50,000				
4	Annual Groundwater Monitoring Field Activities	1	LS	\$7,500	\$7,500				
5	Laboratory Analysis	12	each	\$400	\$4,800				
6	Waste Management	2	drum	\$250	\$500				
7	Prepare Annual Groundwater Monitoring Report	1	LS	\$6,000	\$6,000				
					Total Capital Cost				
					\$138,800				
					Administration and Engineering (10%)				
					\$13,880				
					Contingency (20%)				
					\$27,760				
					Total Cost				
					\$180,440				
OPERATION AND MAINTENANCE COSTS									
8	Inspection of Institutional Controls and Notifications to NYSDEC	1	LS	\$5,000	\$5,000				
9	Annual Groundwater Monitoring	1	LS	\$12,800	\$12,800				
10	Prepare Annual Groundwater Monitoring Report	1	LS	\$6,000	\$6,000				
					Total O&M Cost				
					\$23,800				
					Contingency (20%)				
					\$4,760				
					Total Cost				
11	30-Year Total Present Worth Cost of O&M				\$354,430				
					Total Estimated Cost				
					\$534,870				
					Rounded to				
					\$530,000				

General Notes:

1. Cost estimate is based on ARCADIS' past experience and vendor estimates using 2009 dollars.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual projected cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. ARCADIS is not licensed to provide financial or legal consulting services; as such; this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.

Assumptions:

1. Legal expenses for institutional controls cost estimate includes all labor and materials necessary to institute environmental easements and deed restrictions to prevent potential future use of site groundwater.
2. Abandon existing monitoring wells cost estimate includes all labor, equipment, and materials necessary to over-drill and grout existing groundwater monitoring wells. Cost estimate assumes abandonment activities can be complete two drillers and a geologist at a rate of two wells per day.
3. Groundwater monitoring well installation cost estimate includes all labor, equipment, and materials necessary to install shallow groundwater monitoring wells to a depth up to 20 feet below ground surface. Cost estimate assumes monitoring wells are constructed of PVC with cast iron, flush-mount, locking covers.
4. Annual groundwater monitoring field activities cost estimate includes all equipment, materials, and labor necessary to conduct groundwater monitoring activities once per year. Cost estimate assumes that two workers will require four days to collect groundwater samples from 10 wells.
5. Laboratory analysis cost estimate includes all labor, equipment, and materials necessary to submit groundwater samples for laboratory analysis for BTEX, select SVOCs, and PCBs that were detected in groundwater samples collected during the RI. Cost estimate assumes 12 groundwater samples will be collected per monitoring event including up to three QA/QC samples (field duplicate, matrix spike, and matrix spike duplicate).

Table 5-8
Cost Estimate for Alternative GW3 - Continued Monitoring

WSI - Waste-Stream, Inc. Site - Potsdam, New York

6. Waste management cost estimate includes all labor, equipment, and materials necessary to manage PPE and wastewater generated during annual groundwater monitoring activities. Cost estimate assumes monitoring activities will generate two drums of waste material per year.
7. Prepare annual groundwater monitoring report includes all labor and materials necessary to summarize the results from the annual groundwater monitoring field activities and laboratory analysis. Cost estimate includes reproduction and delivery of report to NYSDEC.
8. Inspection of institutional controls and notifications to NYSDEC cost estimate includes costs associated with implementing institutional controls to minimize the potential for human exposure to site groundwater. Such institutional controls may include governmental controls, proprietary controls, enforcement tools, and/or informational devices. Annual costs associated with institutional controls include verifying the status of institutional controls and preparing/submitting notification to the NYSDEC to demonstrate that the institutional controls are being maintained and remain effective.
9. See Notes 4, 5, and 6.
10. See Note 7.
11. Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation) in accordance with OSWER Directive 9355.3-20 "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis" (USEPA, 1993). It is assumed that "year zero" is 2008.

Table 5-9
 Cost Estimate for Alternative GW4 - Chemical Oxidation of Dissolved-Phase VOCs

WSI - Waste-Stream, Inc. Site - Potsdam, New York

Item #	Description	Estimated Quantity	Unit	Unit Price (materials and labor)	Estimated Amount				
CAPITAL COSTS									
1	Abandon Existing Monitoring Wells	10	each	\$2,000	\$20,000				
2	Groundwater Monitoring Well Installation	10	each	\$5,000	\$50,000				
3	Mobilization/Demobilization	1	LS	\$6,000	\$6,000				
4	Construct and Remove Equipment Decontamination Pad	1	LS	\$7,500	\$7,500				
5	Install Temporary Fencing	600	LF	\$30	\$18,000				
6	Design, Planning, and Permitting	1	LS	\$4,000	\$4,000				
7	Equipment Usage and Technology License	1	LS	\$12,000	\$12,000				
8	Injection Well Installation	14	each	\$1,800	\$25,200				
9	System Infrastructure Installation	1	LS	\$18,000	\$18,000				
10	System Startup and Testing	1	LS	\$2,500	\$2,500				
11	System Operation	1	LS	\$7,200	\$7,200				
12	Project Management and Administration	1	LS	\$4,500	\$4,500				
13	Quarterly Groundwater Monitoring	4	month	\$2,000	\$8,000				
14	Laboratory Analysis	24	each	\$120	\$2,880				
15	Summary Report	1	LS	\$6,000	\$6,000				
16	Legal Expenses for Institutional Controls	1	LS	\$50,000	\$50,000				
Total Capital Cost					\$241,780				
Administration and Engineering (20%)					\$48,356				
Construction Management (10%)					\$24,178				
Contingency (20%)					\$48,356				
Subtotal Cost					\$362,670				
OPERATION AND MAINTENANCE COSTS									
17	Inspection of Institutional Controls and Notifications to NYSDEC	1	LS	\$5,000	\$5,000				
18	Annual Groundwater Monitoring	1	LS	\$12,800	\$12,800				
19	Prepare Annual Groundwater Monitoring Report	1	LS	\$6,000	\$6,000				
Total O&M Cost					\$23,800				
Contingency (20%)					\$4,760				
Subtotal Cost					\$28,560				
20	30-Year Total Present Worth Cost of O&M				\$354,430				
Total Estimated Cost					\$717,100				
Rounded to					\$720,000				

General Notes:

1. Cost estimate is based on ARCADIS' past experience and vendor estimates using 2009 dollars.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual projected cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. ARCADIS is not licensed to provide financial or legal consulting services; as such; this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.

Assumptions:

1. Abandon existing monitoring wells cost estimate includes all labor, equipment, and materials necessary to over-drill and grout existing groundwater monitoring wells. Cost estimate assumes abandonment activities can be complete two drillers and a geologist at a rate of two wells per day.
2. Groundwater monitoring well installation cost estimate includes all labor, equipment, and materials necessary to install shallow groundwater monitoring wells to a depth up to 20 feet below ground surface. Cost estimate assumes monitoring wells are constructed of PVC with cast iron, flush-mount, locking covers.
3. Mobilization/demobilization cost estimate includes mobilization and demobilization of all equipment, materials, and labor necessary to perform in-situ chemical oxidation of impacted site groundwater.

Table 5-9
Cost Estimate for Alternative GW4 - Chemical Oxidation of Dissolved-Phase VOCs

WSI - Waste-Stream, Inc. Site - Potsdam, New York

4. Construct and remove equipment decontamination pad cost estimate includes labor, equipment, and materials necessary to construct and remove a 60-foot by 30-foot decontamination pad and appurtenances. The decontamination pad would consist of 40-mil high-density polyethylene (HDPE) with a six-inch gravel drainage layer placed over the HDPE liner, surrounded by a one-foot high berm and sloped to a collection sump for the collection of decontamination water.
5. Temporary fencing cost estimate includes labor, equipment, and materials necessary to purchase, install, and remove temporary six-foot woven steel chain link fence equipped with top tension wire.
6. Design, planning, and permitting cost estimate includes all labor, equipment, and materials necessary to complete final system design, project plans such as design documents and operation plans, and obtain necessary permits associated with construction and operation of the injection system. Cost estimate based information provided to ARCADIS by Resource Control Corporation (RCC) in February 2007.
7. Equipment usage and technology license cost estimate includes rental of ozone production and injection equipment, as well as associated licensing, for a period of one month. Cost estimate based information provided to ARCADIS by RCC in February 2007.
8. Injection well installation cost estimate includes all labor, equipment, and materials necessary to install up to 14 ozone injection wells. Cost estimate assumes injection wells will be installed via hollow-stem drilling methods to a depth up to 25 feet below ground surface. Cost estimate based information provided to ARCADIS by RCC in February 2007.
9. System infrastructure installation cost estimate includes all labor, equipment, and materials necessary to complete installation of system components such as wellhead connections, process piping, construction of manifolds, and connection to and setup of equipment trailer(s). Cost estimate based information provided to ARCADIS by RCC in February 2007.
10. System startup and testing cost estimate includes all labor, equipment, and materials necessary to complete mechanical and electrical testing of all components, equipment calibration, system performance verification, and system optimization during initial remedial activities. Cost estimate based information provided to ARCADIS by RCC in February 2007.
11. System operation cost estimate includes all labor and electrical usage for system operation for a period of one month. Cost estimate assumes a system operator will visit the site two times per week to monitor system operation. Cost estimate assumes remedial system can be operated by the existing power supply at the site and a utility usage cost of \$200. Cost estimate based information provided to ARCADIS by RCC in February 2007.
12. Project management and administration cost estimate includes project coordination with remedial contractor consisting of one design meeting, one preconstruction meeting, and one progress meeting to be held at the site. Cost estimate based information provided to ARCADIS by RCC in February 2007.
13. Quarterly groundwater monitoring field activities cost estimate includes all equipment, materials, and labor necessary to conduct quarterly groundwater sampling activities for one year following chem-ox application. Cost estimate assumes that two workers will require one day to collect groundwater samples from up to 4 wells in the vicinity of the chem-ox application.
14. Laboratory analysis cost estimate includes all labor, equipment, and materials necessary to analyze groundwater samples for VOCs only. Cost assumes 6 samples will be collected each quarter (including QA/QC samples - duplicate, matrix spike, and matrix spike duplicate) from up to 4 new wells for a period of one year.
15. Summary report cost estimate includes all labor necessary to prepare a report summarizing remedial activities and monthly groundwater sampling activities one year after implementation of remedial activities.
16. Legal expenses for institutional controls cost estimate includes all labor and materials necessary to institute environmental easements and deed restrictions to prevent potential future use of site groundwater.
17. Inspection of institutional controls and notifications to NYSDEC cost estimate includes costs associated with implementing institutional controls to minimize the potential for human exposure to site groundwater. Such institutional controls may include governmental controls, proprietary controls, enforcement tools, and/or informational devices. Annual costs associated with institutional controls include verifying the status of institutional controls and preparing/submitting notification to the NYSDEC to demonstrate that the institutional controls are being maintained and remain effective.

Table 5-9
Cost Estimate for Alternative GW4 - Chemical Oxidation of Dissolved-Phase VOCs

WSI - Waste-Stream, Inc. Site - Potsdam, New York

18. Annual groundwater monitoring cost estimate includes all labor, equipment, and materials to complete annual groundwater monitoring activities and laboratory analysis. Cost estimate assumes that two workers will require four days to collect groundwater samples from 10 wells. Cost include laboratory analysis for BTEX, select SVOCs, and PCBs that were detected in groundwater samples collected during the RI.
19. Prepare annual groundwater monitoring report includes all labor and materials necessary to summarize the results from the annual groundwater monitoring field activities and laboratory analysis. Cost estimate includes reproduction and delivery of report to NYSDEC.
20. Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation) in accordance with OSWER Directive 9355.3-20 "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis" (USEPA, 1993). It is assumed that "year zero" is 2008.

Table 5-10
Cost Estimate for Alternative SD2 - Institutional Controls

WSI - Waste-Stream, Inc. Site - Potsdam, New York

Item #	Description	Estimated Quantity	Unit	Unit Price (materials and labor)	Estimated Amount
1	Legal Expenses for Institutional Controls	1	LS	\$50,000	\$50,000
				Total Capital Cost	\$50,000
				Contingency (20%)	\$10,000
				Subtotal Cost	\$60,000
OPERATION AND MAINTENANCE COSTS					
2	Inspection of Institutional Controls and Notifications to NYSDEC	1	LS	\$5,000	\$5,000
				Total O&M Cost	\$5,000
				Contingency (20%)	\$1,000
				Subtotal Cost	\$6,000
3				30-Year Total Present Worth Cost of O&M	\$74,460
				Total Estimated Cost	\$134,460
				Rounded to	\$135,000

General Notes:

1. Cost estimate is based on ARCADIS' past experience and vendor estimates using 2009 dollars.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual projected cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. ARCADIS is not licensed to provide financial or legal consulting services; as such; this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.

Assumptions:

1. Legal expenses for institutional controls cost estimate includes all labor and materials necessary to institute environmental easements and deed restrictions to prevent current or future site workers from performing intrusive activities.
2. Inspection of institutional controls and notifications to NYSDEC cost estimate includes costs associated with implementing institutional controls to minimize the potential for human exposure to remaining impacted sediment. Such institutional controls may include governmental controls, proprietary controls, enforcement tools, and/or informational devices. Annual costs associated with institutional controls include verifying the status of institutional controls and preparing/submitting notification to the NYSDEC to demonstrate that the institutional controls are being maintained and remain effective.
3. Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation) in accordance with OSWER Directive 9355.3-20 "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis" (USEPA, 1993). It is assumed that "year zero" is 2008.

Table 5-11
 Cost Estimate for Alternative SD3 - Average-Based Sediment Removal to Achieve PCBs < 1 ppm
 with On-Site Consolidation and Off-Site Management and Long-Term Biota Monitoring

WSI - Waste-Stream, Inc. Site - Potsdam, New York

Item #	Description	Estimated Quantity	Unit	Unit Price (materials and labor)	Estimated Amount
CAPITAL COSTS					
1	Mobilization/Demobilization	1	LS	\$100,000	\$100,000
2	Utility Location and Markout	1	LS	\$2,000	\$2,000
3	Construct and Remove Equipment Decontamination Pad	1	LS	\$7,500	\$7,500
4	Erosion Control	4,000	LF	\$1	\$4,000
5	Construction and Maintenance of Soil Staging Areas	1	LS	\$100,000	\$100,000
6	Permitting	1	LS	\$50,000	\$50,000
7	Sediment Excavation and Handling of Excavated Materials	14,700	CY	\$91	\$1,337,700
8	Sediment Regrading and Compaction	9,800	CY	\$10	\$98,000
9	Temporary Water Treatment System	4	month	\$50,000	\$200,000
10	Verification Sampling	300	each	\$400	\$120,000
11	Perforated Drainpipe	500	LF	\$150	\$75,000
12	Geotextile Fabric	3,900	SY	\$3	\$11,700
13	Rip-Rap	3,000	CY	\$85	\$255,000
14	Wetland Restoration Vegetation Plan	1	LS	\$50,000	\$50,000
15	Select Fill Importation, Placement, Grading and Compaction	9,000	CY	\$25	\$225,000
16	Topsoil Importation, Placement, and Grading	2,300	CY	\$25	\$57,500
17	Wetlands Restoration	2.8	acre	\$40,000	\$112,000
18	Solid Waste Characterization	49	each	\$750	\$36,750
19	Liquid Waste Characterization	10	each	\$750	\$7,500
20	Sediment Waste Transportation and Off-Site Management - RCRA Landfill	8,100	ton	\$145	\$1,174,500
21	Legal Expenses for Institutional Controls	1	LS	\$50,000	\$50,000
				Total Capital Cost	\$4,074,150
22				Administration and Engineering (10%)	\$289,965
				Construction Management (5%)	\$144,983
				Contingency (20%)	\$814,830
				Subtotal Cost	\$5,323,928
OPERATION AND MAINTENANCE COSTS (30 YEAR BIENNIAL)					
23	Biennial Wetland Biota Monitoring	1	LS	\$35,000	\$35,000
				Total O&M Cost	\$35,000
				Contingency (20%)	\$7,000
				Subtotal Cost	\$42,000
24				30-Year Total Present Worth Cost of O&M	\$251,580
OPERATION AND MAINTENANCE COSTS (30 YEAR ANNUAL)					
25	Inspection of Institutional Controls and Notifications to NYSDEC	1	LS	\$5,000	\$5,000
				Total O&M Cost	\$5,000
				Contingency (20%)	\$1,000
				Subtotal Cost	\$6,000
26				30-Year Total Present Worth Cost of O&M	\$74,460
OPERATION AND MAINTENANCE COSTS (5 YEAR ANNUAL)					
27	Annual Wetland Vegetation Monitoring	1	LS	\$15,000	\$15,000
				Total O&M Cost	\$15,000
				Contingency (20%)	\$3,000
				Subtotal Cost	\$18,000
28				5-Year Total Present Worth Cost of O&M	\$73,800
				Total Estimated Cost	\$5,723,768
				Rounded to	\$5,700,000

Table 5-11
Cost Estimate for Alternative SD3 - Average-Based Sediment Removal to Achieve PCBs < 1 ppm
with On-Site Consolidation and Off-Site Management and Long-Term Biota Monitoring

WSI - Waste-Stream, Inc. Site - Potsdam, New York

General Notes:

1. Cost estimate is based on ARCADIS' past experience and vendor estimates using 2009 dollars.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual projected cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. ARCADIS is not licensed to provide financial or legal consulting services; as such; this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.
3. Cost estimate assumes Soil Alternatives S3 through S6 would be implemented as part of site remedial activities. Costs for construction of site cap on WSI property are not included with the cost estimate for this sediment alternative.

Assumptions:

1. Mobilization/demobilization cost estimate includes mobilization and demobilization of all equipment, materials, and labor necessary to perform sediment removal activities.
2. Utility location and markout cost estimate includes labor, equipment, and materials necessary to locate, identify, and markout underground utilities at the site. Cost assumes that utility location and markout would be conducted by a private utility locating company over a period of two days at a daily rate of \$1,000 per day.
3. Construct and remove equipment decontamination pad cost estimate includes labor, equipment, and materials necessary to construct and remove a 60-foot by 30-foot decontamination pad and appurtenances. The decontamination pad would consist of 40-mil high-density polyethylene (HDPE) with a six-inch gravel drainage layer placed over the HDPE liner, surrounded by a one-foot high berm and sloped to a collection sump for the collection of decontamination water.
4. Erosion control cost estimate includes all labor, equipment, and materials necessary to purchase and install a three-foot silt fence equipped with stakes 10-foot on-center.
5. Construction and maintenance of soil staging area cost estimate includes labor, equipment, and materials to construct two approximately 100-foot by 100-foot material staging areas consisting of a 12-inch gravel fill layer bermed and sloped to a sump and covered with a 40-mil HDPE liner for the segregation of excavated material. Maintenance costs include inspecting and repairing staging area as necessary and covering staged soil with polyethylene sheeting. Cost assumes construction cost of approximately \$4 per square foot of pad.
6. Permitting cost estimate includes all labor necessary to file for and obtain necessary permits for conducting work in southern and northern drainage area wetlands.
7. Sediment excavation and handling of excavated materials cost estimate includes all labor, equipment, and materials necessary to excavate sediment, transfer excavated material to staging/dewatering/amendment area, and load staged material for off-site transportation or on-site consolidation. Cost estimate includes construction of access roads into northern drainage area, excavation area dewatering, construction of mixing area, mixing/amending excavated material, amendment (i.e., with wood chips, inert wood ash, or Portland cement), and air monitoring during excavation activities. Estimated excavation limits and volumes (in-place) based on thiessen polygons created from previously collected site samples.
8. Sediment regrading and compaction cost estimate includes all labor, equipment, and materials necessary to regrade and compact excavated sediment for use as backfill within the WSI property boundary. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 90% maximum compaction. Cost estimate includes survey verification and compaction testing. Note that this cost estimate has been prepared assuming Alternative S4 would be selected as the preferred soil alternative. However, this sediment alternative could also be paired with either Soil Alternative S5 or S6 (which would change the volume of sediment that could be consolidated on-site and volume of sediment to be managed off-site). Off-site management and on-site consolidation volumes and costs associated with the implementation of this sediment alternative in conjunction with Soil Alternatives S5 and S6 are summarized in the table below.

Table 5-11
Cost Estimate for Alternative SD3 - Average-Based Sediment Removal to Achieve PCBs < 1 ppm
with On-Site Consolidation and Off-Site Management and Long-Term Biota Monitoring

WSI - Waste-Stream, Inc. Site - Potsdam, New York

	Soil Alternative	
	S5 (PCBs > 25 ppm)	S6 (PCBs < 10 ppm)
Sediment Available for Regrading and Compaction (CY)	6,000	2,100
Sediment Waste Transportation and Off-Site Management	3,800	7,700
Solid Waste Landfill (CY)		
Total Estimated Cost of Sediment Alternative SD3	\$6,100,000	\$6,400,000

9. Temporary groundwater treatment system cost estimate includes rental of a portal water treatment system capable of operating at 30 gallons per minute. Cost estimate assumes water treatment system includes pumps, influent piping and hoses, frac tank, carbon filters, bag filters, discharge piping and hoses, and flow meter. Cost estimate assumes bag filters will require change out approximately once per day of operation. Cost estimate assumes treated water would be discharged to site wetlands. Cost estimate based on information provided to ARCADIS by Baker Tanks on March 8, 2007. Cost estimate includes sampling of treated water.
10. Verification sampling cost estimate includes the laboratory analysis of sediment samples collected from sediment excavation areas for PCBs, SVOCs, and RCRA metals to verify impacted sediment has been removed to proposed soil cleanup objectives. Cost estimate assumes a soil sample is collected every 2,500 square-feet of excavation bottom and every 50 linear-feet of excavation sidewalls.
11. Perforated drainpipe cost estimate includes all labor, equipment, and materials necessary to install a perforated drainpipe to replace the on-site portion of the drainage ditch/culvert with a perforated HDPE drainpipe. Cost estimate assumes drainpipe would be covered and includes costs for drainpipe excavation backfill materials.
12. Geotextile fabric cost estimate includes all labor, equipment, and materials necessary to purchase and install non-woven geotextile as a base layer within the southern drainage areas and the portion of the drainage swale not within the WSI property prior to placement of rip-rap stone. Cost estimate includes an additional 10% of material for folding, wrinkles, and overlaps.
13. Rip-rap cost estimate includes all labor, equipment, and materials necessary to place rip-rap stone for backfill in the southern drainage areas and the portion of drainage swale not within the WSI property.
14. Wetland restoration plan cost estimate includes all labor necessary to prepare a wetland restoration plan. Cost estimate includes five days of wetland investigation activities (including collection and analysis of soil samples for soil characterization) by two workers. Cost estimate includes office support for writing wetland restoration plan to include a wetland grading plan, vegetation requirements, and post-restoration monitoring activities.
15. Select fill importation, placement, grading and compaction cost estimate includes all labor, equipment, and materials necessary to purchase, place, grade and compact general fill to replace removed sediment to within six inches of proposed wetland final grades during wetland restoration activities. Cost estimate assumes two feet of general fill required per each excavation area. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 90% maximum compaction. Cost estimate includes survey verification and compaction testing.
16. Topsoil importation, placement, and grading cost estimate includes all labor, equipment, and materials necessary to purchase, place, and grade six inches of topsoil (consistent with existing wetland materials) to meet previously existing wetland grades during wetland restoration activities.
17. Wetland restoration cost estimate includes all labor, equipment, and materials necessary to restore wetlands with seed mixtures, shrubs, and trees.
18. Solid waste characterization cost estimate includes the analysis of sediment samples (including, but not limited to, PCBs, VOCs, SVOCs, and RCRA Metals). Costs assumes that waste characterization samples would be collected at a frequency of one sample per every 500 tons of excavated sediment. The estimated weight of material was based on an assumed 1.5 tons per cubic-yard plus an additional 10% for the addition of stabilizing agents.
19. Liquid waste characterization cost estimate includes the analysis of wastewater sample for PCBs, VOCs, SVOCs, metals, and pesticides.

Table 5-11
Cost Estimate for Alternative SD3 - Average-Based Sediment Removal to Achieve PCBs < 1 ppm
with On-Site Consolidation and Off-Site Management and Long-Term Biota Monitoring

WSI - Waste-Stream, Inc. Site - Potsdam, New York

20. Sediment waste transportation and off-site management - RCRA landfill cost estimate includes all labor, equipment, and materials necessary to transport sediment containing PCBs at concentrations greater than 50 ppm for off-site management at an appropriately permitted RCRA landfill. Cost estimate assumes a material density of 1.5 tons per cubic-yard plus an additional 10% for stabilizing agents. Cost estimate assumes that sediment would be managed at Model City Landfill located in Niagara Falls, New York. Cost estimate includes transportation fuel charge, local, and state taxes. Cost estimate is based on information provided to ARCADIS by Waste Management on December 15, 2008. Note that this cost estimate has been prepared under the assumption that Alternative S4 would be selected as the preferred soil alternative. See Note 8 for off-site management/on-site consolidation volumes associated with the implementation of other soil alternatives.
21. Legal expenses for institutional controls cost estimate includes all labor and materials necessary to institute environmental easements and deed restrictions to prevent current or future site workers from performing intrusive activities in on-site and off-site wetlands.
22. Administration and engineering and construction management costs are based on an assumed 10% and 5% (respectively) of the total capital costs, not including costs for off-site management of material.
23. Biennial wetland biota monitoring cost estimate includes all labor, equipment, and materials necessary to conduct annual wetland monitoring following remedial activities. Cost estimate assumes two workers will require 10 days to collect up to 40 biota samples (e.g., minnows, fish, frogs, etc.) from the northern drainage area (NDA) and drainage swale area that discharges to the NDA. Cost estimate assumes biota samples will be analyzed for PCBs and percent lipids. The scope of monitoring activities is based on the September 2002 FWIA IIC Sampling Plan. The scope of sampling activities shall be reviewed and revised, as appropriate, prior to conducting sampling activities. Cost estimate includes preparation of a report to document results of sampling activities and laboratory analysis of samples.
24. Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation) in accordance with OSWER Directive 9355.3-20 "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis" (USEPA, 1993). It is assumed that "year zero" is 2008.
25. Inspection of institutional controls and notifications to NYSDEC cost estimate includes costs associated with implementing institutional controls to minimize the potential for human exposure to remaining impacted sediment. Such institutional controls may include governmental controls, proprietary controls, enforcement tools, and/or informational devices. Annual costs associated with institutional controls include verifying the status of institutional controls and preparing/submitting notification to the NYSDEC to demonstrate that the institutional controls are being maintained and remain effective.
26. See Note 24.
27. Annual wetland vegetation monitoring cost estimate includes all labor, equipment, and materials necessary to conduct annual wetland vegetation monitoring for five years following remedial activities. Cost estimate assumes two workers will require five days to inspect site wetlands to verify that restored vegetation has been established. The scope of monitoring activities shall be reviewed and revised, as appropriate, prior to conducting sampling activities. Cost estimate includes preparation of an annual report to document results of investigation activities.
28. See Note 24.

Table 5-12
 Cost Estimate for Alternative SD4 - Area-Based Sediment Removal (PCBs > 1 ppm)
 with On-Site Consolidation and Off-Site Management and Long-Term Biota Monitoring

WSI - Waste-Stream, Inc. Site - Potsdam, New York

Item #	Description	Estimated Quantity	Unit	Unit Price (materials and labor)	Estimated Amount
CAPITAL COSTS					
1	Mobilization/Demobilization	1	LS	\$100,000	\$100,000
2	Utility Location and Markout	1	LS	\$2,000	\$2,000
3	Construct and Remove Equipment Decontamination Pad	1	LS	\$7,500	\$7,500
4	Erosion Control	4,000	LF	\$1	\$4,000
5	Construction and Maintenance of Soil Staging Areas	1	LS	\$100,000	\$100,000
6	Permitting	1	LS	\$50,000	\$50,000
7	Sediment Excavation and Handling of Excavated Materials	21,300	CY	\$91	\$1,938,300
8	Sediment Regrading and Compaction	16,400	CY	\$10	\$164,000
9	Temporary Water Treatment System	6	month	\$50,000	\$300,000
10	Verification Sampling	420	each	\$400	\$168,000
11	Perforated Drainpipe	500	LF	\$150	\$75,000
12	Geotextile Fabric	3,900	SY	\$3	\$11,700
13	Rip-Rap	3,000	CY	\$85	\$255,000
14	Wetland Restoration Vegetation Plan	1	LS	\$50,000	\$50,000
15	Select Fill Importation, Placement, Compaction, and Grading	14,000	CY	\$25	\$350,000
16	Topsoil Importation, Placement, and Grading	3,500	CY	\$25	\$87,500
17	Wetlands Restoration	4.4	acre	\$10,000	\$44,000
18	Solid Waste Characterization	71	each	\$750	\$53,250
19	Liquid Waste Characterization	10	each	\$750	\$7,500
20	Sediment Waste Transportation and Off-Site Management - RCRA Landfill	8,100	ton	\$145	\$1,174,500
21	Legal Expenses for Institutional Controls	1	LS	\$50,000	\$50,000
22				Total Capital Cost	\$4,992,250
				Administration and Engineering (10%)	\$381,775
				Construction Management (5%)	\$190,888
				Contingency (20%)	\$998,450
				Subtotal Cost	\$6,563,363
OPERATION AND MAINTENANCE COSTS (30 YEAR BIENNIAL)					
23	Biennial Wetland Biota Monitoring	1	LS	\$35,000	\$35,000
				Total O&M Cost	\$35,000
				Contingency (20%)	\$7,000
				Subtotal Cost	\$42,000
24				30-Year Total Present Worth Cost of O&M	\$251,580
OPERATION AND MAINTENANCE COSTS (30 YEAR ANNUAL)					
25	Inspection of Institutional Controls and Notifications to NYSDEC	1	LS	\$5,000	\$5,000
				Total O&M Cost	\$5,000
				Contingency (20%)	\$1,000
				Subtotal Cost	\$6,000
26				30-Year Total Present Worth Cost of O&M	\$74,460
OPERATION AND MAINTENANCE COSTS (5 YEAR ANNUAL)					
27	Annual Wetland Vegetation Monitoring	1	LS	\$15,000	\$15,000
				Total O&M Cost	\$15,000
				Contingency (20%)	\$3,000
				Subtotal Cost	\$18,000
28				5-Year Total Present Worth Cost of O&M	\$73,800
				Total Estimated Cost	\$6,963,203
				Rounded to	\$7,000,000

Table 5-12
Cost Estimate for Alternative SD4 - Area-Based Sediment Removal (PCBs > 1 ppm)
with On-Site Consolidation and Off-Site Management and Long-Term Biota Monitoring

WSI - Waste-Stream, Inc. Site - Potsdam, New York

General Notes:

1. Cost estimate is based on ARCADIS' past experience and vendor estimates using 2009 dollars.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual projected cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. ARCADIS is not licensed to provide financial or legal consulting services; as such; this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.
3. Cost estimate assumes Soil Alternatives S3 through S6 would be implemented as part of site remedial activities. Costs for construction of site cap on WSI property are not included with the cost estimate for this sediment alternative.

Assumptions:

1. Mobilization/demobilization cost estimate includes mobilization and demobilization of all equipment, materials, and labor necessary to perform sediment removal activities.
2. Utility location and markout cost estimate includes labor, equipment, and materials necessary to locate, identify, and markout underground utilities at the site. Cost assumes that utility location and markout would be conducted by a private utility locating company over a period of two days at a daily rate of \$1,000 per day.
3. Construct and remove equipment decontamination pad cost estimate includes labor, equipment, and materials necessary to construct and remove a 60-foot by 30-foot decontamination pad and appurtenances. The decontamination pad would consist of 40-mil high-density polyethylene (HDPE) with a six-inch gravel drainage layer placed over the HDPE liner, surrounded by a one-foot high berm and sloped to a collection sump for the collection of decontamination water.
4. Erosion control cost estimate includes all labor, equipment, and materials necessary to purchase and install a three-foot silt fence equipped with stakes 10-foot on-center.
5. Construction and maintenance of soil staging area cost estimate includes labor, equipment, and materials to construct two approximately 100-foot by 100-foot material staging areas consisting of a 12-inch gravel fill layer bermed and sloped to a sump and covered with a 40-mil HDPE liner for the segregation of excavated material. Maintenance costs include inspecting and repairing staging area as necessary and covering staged soil with polyethylene sheeting. Cost assumes construction cost of approximately \$4 per square foot of pad.
6. Permitting cost estimate includes all labor necessary to file for and obtain necessary permits for conducting work in southern and northern drainage area wetlands.
7. Sediment excavation and handling of excavated materials cost estimate includes all labor, equipment, and materials necessary to excavate sediment, transfer excavated material to staging/dewatering/amendment area, and load staged material for off-site transportation or on-site consolidation. Cost estimate includes construction of access roads into northern drainage area, excavation area dewatering, construction of mixing area, mixing/amending excavated material, amendment (i.e., with wood chips, inert wood ash, or Portland cement), and air monitoring during excavation activities. Estimated excavation limits and volumes (in-place) based on thiessen polygons created from previously collected site samples.
8. Sediment regrading and compaction cost estimate includes all labor, equipment, and materials necessary to regrade and compact excavated sediment for use as backfill within the WSI property boundary. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 90% maximum compaction. Cost estimate includes survey verification and compaction testing. Note that this cost estimate has been prepared assuming Alternative S4 would be selected as the preferred soil alternative. However, this sediment alternative could also be paired with either Soil Alternative S5 or S6 (which would change the volume of sediment that could be consolidated on-site and volume of sediment to be managed off-site). Off-site management and on-site consolidation volumes and costs associated with the implementation of this sediment alternative in conjunction with Soil Alternatives S5 and S6 are summarized in the table below.

	Soil Alternative	
	S5 (PCBs > 25 ppm)	S6 (PCBs > 10 ppm)
Sediment Available for Regrading and Compaction (CY)	12,600	8,700
Sediment Waste Transportation and Off-Site Management	3,800	7,700
Solid Waste Landfill (CY)		
Total Estimated Cost of Sediment Alternative SD4	\$7,300,000	\$7,600,000

Table 5-12
Cost Estimate for Alternative SD4 - Area-Based Sediment Removal (PCBs > 1 ppm)
with On-Site Consolidation and Off-Site Management and Long-Term Biota Monitoring

WSI - Waste-Stream, Inc. Site - Potsdam, New York

9. Temporary groundwater treatment system cost estimate includes rental of a portal water treatment system capable of operating at 30 gallons per minute. Cost estimate assumes water treatment system includes pumps, influent piping and hoses, frac tank, carbon filters, bag filters, discharge piping and hoses, and flow meter. Cost estimate assumes bag filters will require change out approximately once per day of operation. Cost estimate assumes treated water would be discharged to site wetlands. Cost estimate based on information provided to ARCADIS by Baker Tanks on March 8, 2007. Cost estimate includes sampling of treated water.
10. Verification sampling cost estimate includes the laboratory analysis of sediment samples collected from sediment excavation areas for PCBs, SVOCs, and RCRA metals to verify impacted sediment has been removed to proposed soil cleanup objectives. Cost estimate assumes a soil sample is collected every 2,500 square-feet of excavation bottom and every 50 linear-feet of excavation sidewalls.
11. Perforated drainpipe cost estimate includes all labor, equipment, and materials necessary to install a perforated drainpipe to replace the on-site portion of the drainage ditch/culvert with a perforated HDPE drainpipe. Cost estimate assumes drainpipe would be covered and includes costs for drainpipe excavation backfill materials.
12. Geotextile fabric cost estimate includes all labor, equipment, and materials necessary to purchase and install non-woven geotextile as a base layer within the southern drainage areas and the portion of the drainage swale not within the WSI property prior to placement of rip-rap stone. Cost estimate includes an additional 10% of material for folding, wrinkles, and overlaps.
13. Rip-rap cost estimate includes all labor, equipment, and materials necessary to place rip-rap stone for backfill in the southern drainage areas and the portion of drainage swale not within the WSI property.
14. Wetland restoration plan cost estimate includes all labor necessary to prepare a wetland restoration plan. Cost estimate includes five days of wetland investigation activities (including collection and analysis of soil samples for soil characterization) by two workers. Cost estimate includes office support for writing wetland restoration plan to include a wetland grading plan, vegetation requirements, and post-restoration monitoring activities.
15. Select fill importation, placement, grading and compaction cost estimate includes all labor, equipment, and materials necessary to purchase, place, grade and compact general fill to replace removed sediment to within six inches of proposed wetland final grades during wetland restoration activities. Cost estimate assumes two feet of general fill required per each excavation area. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 90% maximum compaction. Cost estimate includes survey verification and compaction testing.
16. Topsoil importation, placement, and grading cost estimate includes all labor, equipment, and materials necessary to purchase, place, and grade six inches of topsoil (consistent with existing wetland materials) to meet previously existing wetland grades during wetland restoration activities. Cost estimate includes survey verification and compaction testing.
17. Wetland restoration cost estimate includes all labor, equipment, and materials necessary to restore wetlands with seed mixtures, shrubs, and trees.
18. Solid waste characterization cost estimate includes the analysis of sediment samples (including, but not limited to, PCBs, VOCs, SVOCs, and RCRA Metals). Costs assumes that waste characterization samples would be collected at a frequency of one sample per every 500 tons of excavated sediment. The estimated weight of material was based on an assumed 1.5 tons per cubic-yard plus an additional 10% for the addition of stabilizing agents.
19. Liquid waste characterization cost estimate includes the analysis of wastewater sample for PCBs, VOCs, SVOCs, metals, and pesticides.
20. Sediment waste transportation and off-site management - RCRA landfill cost estimate includes all labor, equipment, and materials necessary to transport sediment containing PCBs at concentrations greater than 50 ppm for off-site management at an appropriately permitted RCRA landfill. Cost estimate assumes a material density of 1.5 tons per cubic-yard plus an additional 10% for stabilizing agents. Cost estimate assumes that sediment would be managed at Model City Landfill located in Niagara Falls, New York. Cost estimate includes transportation fuel charge, local, and state taxes. Cost estimate is based on information provided to ARCADIS by Waste Management on December 15, 2008. Note that this cost estimate has been prepared under the assumption that Alternative S4 would be selected as the preferred soil alternative. See Note 8 for off-site management/on-site consolidation volumes associated with the implementation of other soil alternatives.

Table 5-12
Cost Estimate for Alternative SD4 - Area-Based Sediment Removal (PCBs > 1 ppm)
with On-Site Consolidation and Off-Site Management and Long-Term Biota Monitoring

WSI - Waste-Stream, Inc. Site - Potsdam, New York

21. Legal expenses for institutional controls cost estimate includes all labor and materials necessary to institute environmental easements and deed restrictions to prevent current or future site workers from performing intrusive activities in on-site and off-site wetlands.
22. Administration and engineering and construction management costs are based on an assumed 10% and 5% (respectively) of the total capital costs, not including costs for off-site management of material.
23. Biennial wetland biota monitoring cost estimate includes all labor, equipment, and materials necessary to conduct annual wetland monitoring following remedial activities. Cost estimate assumes two workers will require 10 days to collect up to 40 biota samples (e.g., minnows, fish, frogs, etc.) from the northern drainage area (NDA) and drainage swale area that discharges to the NDA. Cost estimate assumes biota samples will be analyzed for PCBs and percent lipids. The scope of monitoring activities is based on the September 2002 FWIA IIC Sampling Plan. The scope of sampling activities shall be reviewed and revised, as appropriate, prior to conducting sampling activities. Cost estimate includes preparation of a report to document results of sampling activities and laboratory analysis of samples.
24. Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation) in accordance with OSWER Directive 9355.3-20 "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis" (USEPA, 1993). It is assumed that "year zero" is 2008.
25. Inspection of institutional controls and notifications to NYSDEC cost estimate includes costs associated with implementing institutional controls to minimize the potential for human exposure to remaining impacted sediment. Such institutional controls may include governmental controls, proprietary controls, enforcement tools, and/or informational devices. Annual costs associated with institutional controls include verifying the status of institutional controls and preparing/submitting notification to the NYSDEC to demonstrate that the institutional controls are being maintained and remain effective.
26. See Note 24.
27. Annual wetland vegetation monitoring cost estimate includes all labor, equipment, and materials necessary to conduct annual wetland vegetation monitoring for five years following remedial activities. Cost estimate assumes two workers will require five days to inspect site wetlands to verify that restored vegetation has been established. The scope of monitoring activities shall be reviewed and revised, as appropriate, prior to conducting sampling activities. Cost estimate includes preparation of an annual report to document results of investigation activities.
28. See Note 24.

Table 5-13
 Cost Estimate for Alternative SD5 - Area-Based Sediment Removal (PCBs > 0.1 ppm)
 with Off-Site Management and Long-Term Biota Monitoring

WSI - Waste-Stream, Inc. Site - Potsdam, New York

Item #	Description	Estimated Quantity	Unit	Unit Price (materials and labor)	Estimated Amount
CAPITAL COSTS					
1	Mobilization/Demobilization	1	LS	\$100,000	\$100,000
2	Utility Location and Markout	1	LS	\$2,000	\$2,000
3	Construct and Remove Equipment Decontamination Pad	1	LS	\$7,500	\$7,500
4	Erosion Control	4,000	LF	\$1	\$4,000
5	Construction and Maintenance of Soil Staging Areas	1	LS	\$150,000	\$150,000
6	Permitting	1	LS	\$50,000	\$50,000
7	Sediment Excavation and Handling of Excavated Materials	37,800	CY	\$91	\$3,439,800
8	Temporary Water Treatment System	11	month	\$50,000	\$550,000
9	Verification Sampling	640	each	\$400	\$256,000
10	Perforated Drainpipe	500	LF	\$150	\$75,000
11	Geotextile Fabric	3,900	SY	\$3	\$11,700
12	Rip-Rap	3,000	CY	\$85	\$255,000
13	Wetland Restoration Vegetation Plan	1	LS	\$50,000	\$50,000
14	Select Fill Importation, Placement, Compaction, and Grading	27,200	CY	\$25	\$680,000
15	Topsoil Importation, Placement, and Grading	6,800	CY	\$25	\$170,000
16	Wetlands Restoration	8.5	acre	\$10,000	\$85,000
17	Solid Waste Characterization	125	each	\$750	\$93,750
18	Liquid Waste Characterization	20	each	\$750	\$15,000
19	Sediment Waste Transportation and Off-Site Management - Solid Waste Landfill	29,800	ton	\$50	\$1,490,000
20	Sediment Waste Transportation and Off-Site Management - RCRA Landfill	8,100	ton	\$145	\$1,174,500
21	Legal Expenses for Institutional Controls	1	LS	\$50,000	\$50,000
				Total Capital Cost	\$8,709,250
22				Administration and Engineering (10%)	\$604,475
				Construction Management (5%)	\$302,238
				Contingency (20%)	\$1,741,850
				Subtotal Cost	\$11,357,813
OPERATION AND MAINTENANCE COSTS (30 YEAR BIENNIAL)					
23	Biennial Wetland Biota Monitoring	1	LS	\$35,000	\$35,000
				Total O&M Cost	\$35,000
				Contingency (20%)	\$7,000
				Subtotal Cost	\$42,000
24				30-Year Total Present Worth Cost of O&M	\$251,580
OPERATION AND MAINTENANCE COSTS (30 YEAR ANNUAL)					
25	Inspection of Institutional Controls and Notifications to NYSDEC	1	LS	\$5,000	\$5,000
				Total O&M Cost	\$5,000
				Contingency (20%)	\$1,000
				Subtotal Cost	\$6,000
26				30-Year Total Present Worth Cost of O&M	\$74,460
OPERATION AND MAINTENANCE COSTS (5 YEAR ANNUAL)					
27	Annual Wetland Vegetation Monitoring	1	LS	\$15,000	\$15,000
				Total O&M Cost	\$15,000
				Contingency (20%)	\$3,000
				Subtotal Cost	\$18,000
28				5-Year Total Present Worth Cost of O&M	\$73,800
				Total Estimated Cost	\$11,757,653
				Rounded to	\$11,800,000

Table 5-13
Cost Estimate for Alternative SD5 - Area-Based Sediment Removal (PCBs > 0.1 ppm)
with Off-Site Management and Long-Term Biota Monitoring

WSI - Waste-Stream, Inc. Site - Potsdam, New York

General Notes:

1. Cost estimate is based on ARCADIS' past experience and vendor estimates using 2009 dollars.
2. This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual projected cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. ARCADIS is not licensed to provide financial or legal consulting services; as such; this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.

Assumptions:

1. Mobilization/demobilization cost estimate includes mobilization and demobilization of all equipment, materials, and labor necessary to perform sediment removal activities.
2. Utility location and markout cost estimate includes labor, equipment, and materials necessary to locate, identify, and markout underground utilities at the site. Cost assumes that utility location and markout would be conducted by a private utility locating company over a period of two days at a daily rate of \$1,000 per day.
3. Construct and remove equipment decontamination pad cost estimate includes labor, equipment, and materials necessary to construct and remove a 60-foot by 30-foot decontamination pad and appurtenances. The decontamination pad would consist of 40-mil high-density polyethylene (HDPE) with a six-inch gravel drainage layer placed over the HDPE liner, surrounded by a one-foot high berm and sloped to a collection sump for the collection of decontamination water.
4. Erosion control cost estimate includes all labor, equipment, and materials necessary to purchase and install a three-foot silt fence equipped with stakes 10-foot on-center.
5. Construction and maintenance of soil staging area cost estimate includes labor, equipment, and materials to construct an approximate 100-foot by 200-foot and an approximate 100-foot by 100-foot material staging areas consisting of a 12-inch gravel fill layer bermed and sloped to a sump and covered with a 40-mil HDPE liner for the segregation of excavated material. Maintenance costs include inspecting and repairing staging area as necessary and covering staged soil with polyethylene sheeting. Cost assumes construction cost of approximately \$4 per square foot of pad.
6. Permitting cost estimate includes all labor necessary to file for and obtain necessary permits for conducting work in southern and northern drainage area wetlands.
7. Sediment excavation and handling of excavated materials cost estimate includes all labor, equipment, and materials necessary to excavate sediment, transfer excavated material to staging/dewatering/amendment area, and load staged material for off-site transportation or on-site consolidation. Cost estimate includes construction of access roads into northern drainage area, excavation area dewatering, construction of mixing area, mixing/amending excavated material, amendment (i.e., with wood chips, inert wood ash, or Portland cement), and air monitoring during excavation activities. Estimated excavation limits and volumes (in-place) based on thiessen polygons created from previously collected site samples.
8. Temporary groundwater treatment system cost estimate includes rental of a portal water treatment system capable of operating at 30 gallons per minute. Cost estimate assumes water treatment system includes pumps, influent piping and hoses, frac tank, carbon filters, bag filters, discharge piping and hoses, and flow meter. Cost estimate assumes bag filters will require change out approximately once per day of operation. Cost estimate assumes treated water would be discharged to site wetlands. Cost estimate based on information provided to ARCADIS by Baker Tanks on March 8, 2007. Cost estimate includes sampling of treated water.
9. Verification sampling cost estimate includes the laboratory analysis of sediment samples collected from sediment excavation areas for PCBs, SVOCs, and RCRA metals to verify impacted sediment has been removed to proposed soil cleanup objectives. Cost estimate assumes a soil sample is collected every 2,500 square-feet of excavation bottom and every 50 linear-feet of excavation sidewalls.
10. Perforated drainpipe cost estimate includes all labor, equipment, and materials necessary to install a perforated drainpipe to replace the on-site portion of the drainage ditch/culvert with a perforated HDPE drainpipe. Cost estimate assumes drainpipe would be covered and includes costs for drainpipe excavation backfill materials.

Table 5-13
Cost Estimate for Alternative SD5 - Area-Based Sediment Removal (PCBs > 0.1 ppm)
with Off-Site Management and Long-Term Biota Monitoring

WSI - Waste-Stream, Inc. Site - Potsdam, New York

11. Geotextile fabric cost estimate includes all labor, equipment, and materials necessary to purchase and install non-woven geotextile as a base layer within the southern drainage areas and the portion of the drainage swale not within the WSI property prior to placement of rip-rap stone. Cost estimate includes an additional 10% of material for folding, wrinkles, and overlaps.
12. Rip-rap cost estimate includes all labor, equipment, and materials necessary to place rip-rap stone for backfill in the southern drainage areas and the portion of drainage swale not within the WSI property.
13. Wetland restoration plan cost estimate includes all labor necessary to prepare a wetland restoration plan. Cost estimate includes five days of wetland investigation activities (including collection and analysis of soil samples for soil characterization) by two workers. Cost estimate includes office support for writing wetland restoration plan to include a wetland grading plan, vegetation requirements, and post-restoration monitoring activities.
14. Select fill importation, placement, grading and compaction cost estimate includes all labor, equipment, and materials necessary to purchase, place, grade and compact general fill to replace removed sediment to within six inches of proposed wetland final grades during wetland restoration activities. Cost estimate assumes two feet of general fill required per each excavation area. Cost estimate assumes material to be placed in 12-inch lifts and compaction to 90% maximum compaction. Cost estimate includes survey verification and compaction testing.
15. Topsoil importation, placement, and grading cost estimate includes all labor, equipment, and materials necessary to purchase, place, and grade six inches of topsoil (consistent with existing wetland materials) to meet previously existing wetland grades during wetland restoration activities. Cost estimate includes survey verification and compaction testing.
16. Wetland restoration cost estimate includes all labor, equipment, and materials necessary to restore wetlands with seed mixtures, shrubs, and trees.
17. Solid waste characterization cost estimate includes the analysis of sediment samples (including, but not limited to, PCBs, VOCs, SVOCs, and RCRA Metals). Costs assumes that waste characterization samples would be collected at a frequency of one sample per every 500 tons of excavated sediment. The estimated weight of material was based on an assumed 1.5 tons per cubic-yard plus an additional 10% for the addition of stabilizing agents.
18. Liquid waste characterization cost estimate includes the analysis of wastewater sample for PCBs, VOCs, SVOCs, metals, and pesticides.
19. Sediment waste transportation and off-site management - solid waste landfill cost estimate includes all labor, equipment, and materials necessary to transport sediment containing PCBs at concentrations less than 50 ppm for off-site management at an appropriate landfill. Cost estimate assumes a material density of 1.5 tons per cubic-yard plus an additional 10% for stabilizing agents. Cost estimate assumes sediment would be managed at Seneca Meadows Landfill located in Waterloo, New York. Cost estimate includes transportation fuel charge and all applicable taxes. Cost estimate is based on information provided to ARCADIS by Seneca Meadows Landfill on December 16, 2008.
20. Sediment waste transportation and off-site management - RCRA landfill cost estimate includes all labor, equipment, and materials necessary to transport sediment containing PCBs at concentrations greater than 50 ppm for off-site management at an appropriately permitted RCRA landfill. Cost estimate assumes a material density of 1.5 tons per cubic-yard plus an additional 10% for stabilizing agents. Cost estimate assumes that sediment would be managed at Model City Landfill located in Niagara Falls, New York. Cost estimate includes transportation fuel charge, local, and state taxes. Cost estimate is based on information provided to ARCADIS by Waste Management on December 15, 2008.
21. Legal expenses for institutional controls cost estimate includes all labor and materials necessary to institute environmental easements and deed restrictions to prevent current or future site workers from performing intrusive activities in on-site and off-site wetlands.
22. Administration and engineering and construction management costs are based on an assumed 10% and 5% (respectively) of the total capital costs, not including costs for off-site management of material.

**Table 5-13
Cost Estimate for Alternative SD5 - Area-Based Sediment Removal (PCBs > 0.1 ppm)
with Off-Site Management and Long-Term Biota Monitoring**

WSI - Waste-Stream, Inc. Site - Potsdam, New York

23. Biennial wetland biota monitoring cost estimate includes all labor, equipment, and materials necessary to conduct annual wetland monitoring following remedial activities. Cost estimate assumes two workers will require 10 days to collect up to 40 biota samples (e.g., minnows, fish, frogs, etc.) from the northern drainage area (NDA) and drainage swale area that discharges to the NDA. Cost estimate assumes biota samples will be analyzed for PCBs and percent lipids. The scope of monitoring activities is based on the September 2002 FWIA IIC Sampling Plan. The scope of sampling activities shall be reviewed and revised, as appropriate, prior to conducting sampling activities. Cost estimate includes preparation of a report to document results of sampling activities and laboratory analysis of samples.
24. Present worth is estimated based on a 7% beginning-of-year discount rate (adjusted for inflation) in accordance with OSWER Directive 9355.3-20 "Revisions to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis" (USEPA, 1993). It is assumed that "year zero" is 2008.
25. Inspection of institutional controls and notifications to NYSDEC cost estimate includes costs associated with implementing institutional controls to minimize the potential for human exposure to remaining impacted sediment. Such institutional controls may include governmental controls, proprietary controls, enforcement tools, and/or informational devices. Annual costs associated with institutional controls include verifying the status of institutional controls and preparing/submitting notification to the NYSDEC to demonstrate that the institutional controls are being maintained and remain effective.
26. See Note 24.
27. Annual wetland vegetation monitoring cost estimate includes all labor, equipment, and materials necessary to conduct annual wetland vegetation monitoring for five years following remedial activities. Cost estimate assumes two workers will require five days to inspect site wetlands to verify that restored vegetation has been established. The scope of monitoring activities shall be reviewed and revised, as appropriate, prior to conducting sampling activities. Cost estimate includes preparation of an annual report to document results of investigation activities.
28. See Note 24.